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National Eutrophication Survey, Las Vegas, Nev

Prepared for

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NATIONAL EUTROPHICATION SURVEY

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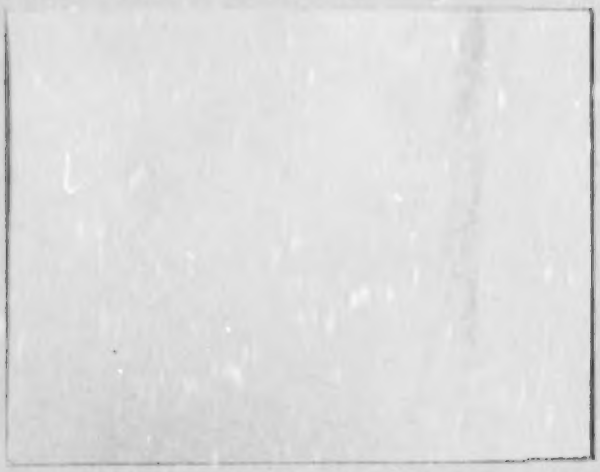

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT
ON
TIMS FORD AND WOODS RESERVOIRS
MOORE, FRANKLIN, AND COFFEE COUNTIES
TENNESSEE

EPA REGION IV

WORKING PAPER No. 455

WITH THE COOPERATION OF THE

TENNESSEE DEPARTMENT OF PUBLIC HEALTH

AND THE

TENNESSEE NATIONAL GUARD

SEPTEMBER 1976

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point source discharge reduction and nonpoint source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by the U.S. Environmental Protection Agency and to augment plans implementation by the states.

ACKNOWLEDGMENTS

The staff of the National Eutrophication Survey (Office of Research and Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the Tennessee Department of Public Health for professional involvement, to the Tennessee National Guard for conducting the tributary sampling phase of the Survey, and to those Tennessee wastewater treatment plant operators who provided effluent samples and flow data.

The staff of the Division of Water Quality Control, Tennessee Department of Public Health; the Division of Environmental Planning, Tennessee Valley Authority; and the Nashville District Corps of Engineers provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports and provided critiques most useful in the preparation of this Working Paper series.

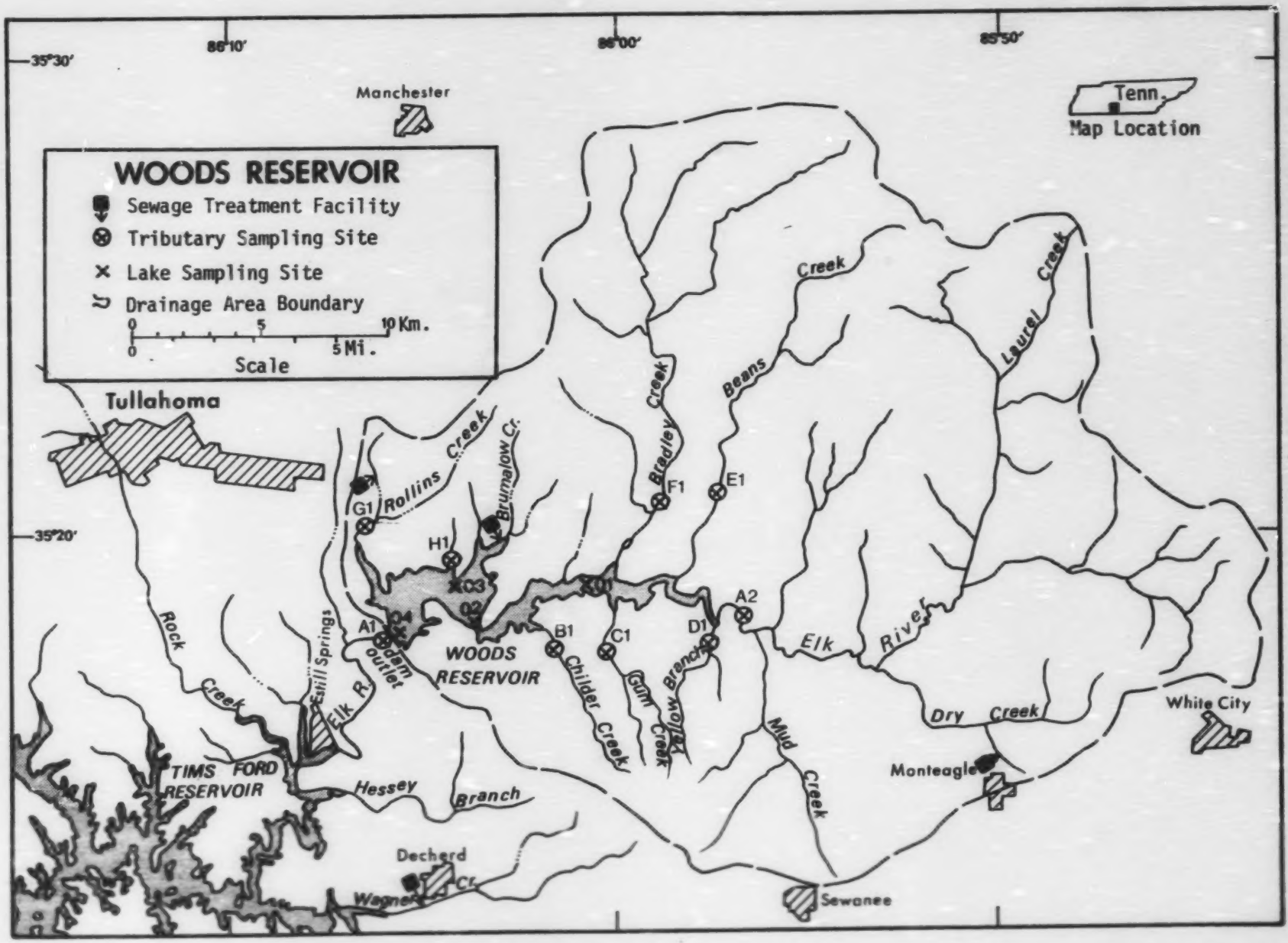
Major General William C. Smith, former Adjutant General of Tennessee, and Project Officer Colonel Wilburn C. Johnson, who directed the volunteer efforts of the Tennessee National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

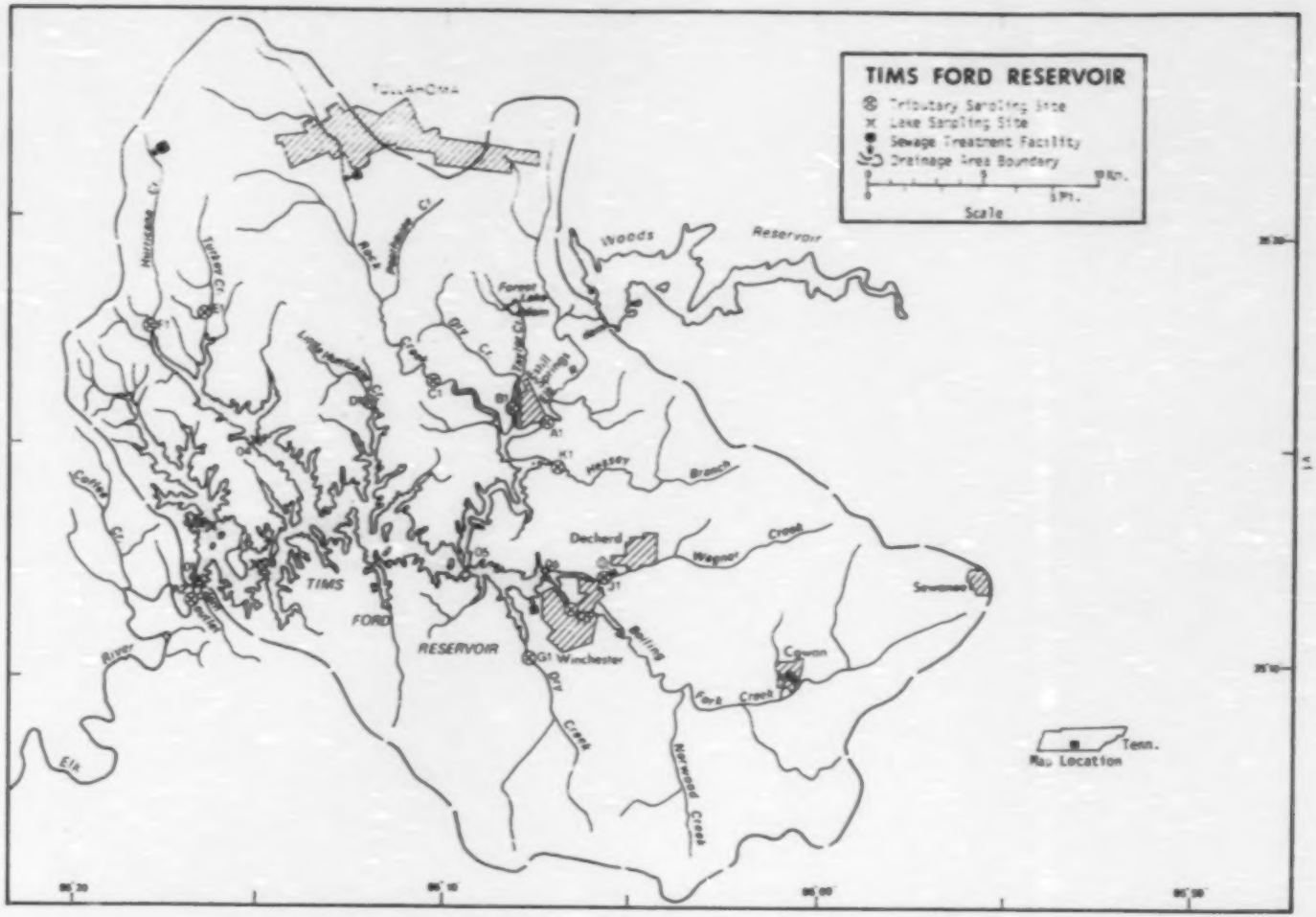
NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF TENNESSEE

LAKE NAME	COUNTY
Barkley	Stewart, Montgomery (Trigg, Lyon in KY)
Boone	Washington, Sullivan, Carter
Cheatham	Cheatham, Davidson
Cherokee	Jefferson, Hamblen, Grainger, Hawkins
Chickamauga	Hamilton, Rhea, Meigs, McMinn
Douglas	Sevier, Jefferson, Cocke
Fort Loudon	Loudon, Knox, Blount
Great Falls	White, Van Buren
Nickajack	Marion, Hamilton
Old Hickory	Sumner, Davidson, Wilson, Smith, Trousdale
Percy Priest	Davidson, Rutherford
Reelfoot	Obion
South Holston	Sullivan (Washington in VA)
Tims Ford	Mocre, Franklin
Watts Bar	Rhea, Meigs, Cumberland, Roane, Loudon
Woods (Elk River)	Franklin, Coffee


WOODS RESERVOIR
Sewage Treatment Facility
Tributary Sampling Site
Lake Sampling Site
Drainage Area Boundary
0 5 10 Km.
0 5 Mi.
Scale
Manchester
Tenn.
Map Location
35°30'
86°10'
86°00'
85°50'
35°20'
Tullahoma
Rollins Creek
Brumalow Cr.
Bradley Creek
Beans Creek
Laurel Creek
Rock Creek
Hill Springs
Elk R.
dam outlet
WOODS RESERVOIR
Childer Creek
Gum Creek
Willow branch
Mud Creek
Elk River
Dry Creek
White City
Monteagle
TIMS FORD RESERVOIR
Hessey Branch
Decherd
Wagner Cr.
Sewanee
G1
H1
F1
E1
A1
A2
B1
C1
D1
C3
C4
C2
X1


TIMS FORD RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
Scale
Tenn.
Map Location
Woods Reservoir
Former Lake
Dry Cr.
Indian Cr.
Hurricane Cr.
Taylor Cr.
Rock Castle Cr.
Little Hurricane Cr.
Coffee Cr.
Elk River
TIMS FORD RESERVOIR
Dry Creek
Norwood Creek
Hussey Branch
Wagner Creek
Boiling Fork Creek
Cowan
Sewanee
Winchester
Decherd
Tullahoma

REPORT ON WOODS RESERVOIR AND TIMS FORD RESERVOIR

STORET NOS. 4728 and 4724

I. CONCLUSIONS

A. Trophic Condition:*

On the basis of field observations and Survey data, Woods and Tims Ford Reservoirs are considered eutrophic. Dissolved oxygen concentrations in Woods Reservoir were severely depressed or depleted below 25 feet during summer sampling with hydrogen sulfide production detected during both summer and fall. Secchi disc visibility was quite low; chlorophyll a levels in the lake ranged from 1.2 µg/l to 14.0 µg/l with a mean of 7.4 µg/l.

While Survey data (especially low dissolved oxygen values in the hypolimnion) suggest that Tims Ford is eutrophic, it must be taken into account that the reservoir was only two years old at the time of sampling. Decomposition of the organic load in new reservoirs often results in severe depression in oxygen levels and simultaneous nutrient releases. Thus, although the water clarity was high and nutrient levels moderate at the time of sampling, a tentative assignment of eutrophic is warranted in the case of Tims Ford Reservoir. The water quality should be

*See Appendix E.

reevaluated to determine whether dissolved oxygen levels remain badly depressed or whether by this time a less eutrophic condition characterizes the reservoir.

Survey limnologists reported emergent and submerged vegetation in Woods Reservoir, but no algal blooms were noted on either lake.

B. Rate-Limiting Nutrient:

Algal assay results indicate that Woods and Tims Ford Reservoirs were limited by available phosphorus. Spikes with phosphorus or phosphorus and nitrogen simultaneously resulted in increased assay yields. Addition of nitrogen alone did not stimulate a growth response. The ratios of available inorganic nitrogen to orthophosphorus (N/P) in both lakes substantiate these results.

C. Nutrient Controllability:

1. Point sources -

The mean annual phosphorus load from point sources was estimated to be 30.4% of the total reaching Woods Reservoir. The Arnold Engineering Development Testing Area contributed 22.9% of the total, and the city of Monteagle contributed 6.8%.

Point sources contributed 55.3% of the total phosphorus load to Tims Ford Reservoir. The city of Tullahoma contributed 31.5% and the city of Winchester contributed 12.3% of the total load estimates.

The calculated annual phosphorus loadings of 1.08 and 1.35 g $P/m^2/yr$ for Woods and Tims Ford Reservoirs, respectively, are slightly greater than Vollenweider's (1975) proposed "eutrophic" loading for lakes with such volumes and retention times. Elimination of the known point sources impacting the two reservoirs would lower these annual loading rates to below Vollenweider's "eutrophic" levels, and further improve the existing water quality of these two Elk River impoundments.

2. Nonpoint sources -

The mean annual phosphorus loads from nonpoint sources impacting Woods and Tims Ford Reservoir, respectively, were 69.6% and 68.5% of the total phosphorus loads. Measured tributaries accounted for 46.2% of the total reaching Woods Reservoir and 41.5% reaching Tims Ford Reservoir. Ungaged drainage areas were estimated to have contributed 21.7% and 1.9%, respectively.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

Lake and drainage basin characteristics are itemized below. Lake morphometry data for Tims Ford Reservoir were provided by the Tennessee Valley Authority; tributary flow data were provided by the Tennessee District Office of the U.S. Geological Survey (USGS). Mean hydraulic retention time for Woods Reservoir was provided by the Tennessee Valley Authority and for Tims Ford Reservoir was obtained by dividing the lake volume by the mean flow of the outlet. Drainage area for tributary A-2, Elk River (Tims Ford Reservoir) was provided by the Tennessee Valley Authority. Tributary drainage areas plus the Tims Ford lake surface area do not equal the outlet drainage area probably because of differences in the pool elevation used by the different sources in their calculations. Precipitation values are estimated by methods as outlined in National Eutrophication Survey (NES) Working Paper No. 175. A table of metric/English conversions is included as Appendix A.

A. Lake Morphometry:

		Woods Reservoir	Tims Ford Reservoir	
1.	Surface area:	16.11	42.90	km^2.
2.	Mean depth:	5.7	15.2	meters.
3.	Maximum depth:	Unknown	43.6	meters.
4.	Volume:	91.827	749.968 x 10^6	m^3.
5.	Mean hydraulic retention time:	85	300	days.

B. Tributary and Outlet (see Appendix B for flow data):

1. Tributaries -

Woods Reservoir			Tims Ford Reservoir		
Name	Drainage area(km^2)	Mean flow (m^3/sec)	Name	Drainage area(km^2)	Mean flow (m^3/sec)
A(2) Elk River	226.9	5.43	A(1) Elk River	730.4	13.03
B(1) Childer Creek	16.7	0.30	B(1) Taylor Creek	17.8	0.30
C(1) Gum Creek	14.1	0.25	C(1) Rock Creek	106.7	1.82
D(1) Yellow Branch	11.9	0.21	D(1) Little Hurricane Creek	5.9	0.10
E(1) Beans Creek	46.9	0.84	E(1) Turkey Creek	10.1	0.16
F(1) Bradley Creek	130.8	2.35	F(1) Hurricane Creek	9.7	0.17
G(1) Rollins Creek	17.7	0.46	G(1) Dry Creek	59.6	1.02
H(1) Unnamed Creek in Lawson Hollow	3.0	0.08	H(1) Boiling Fork Creek	271.9	4.63
			J(1) Wagner Creek	43.8	0.75
			K(1) Hessey Creek	26.9	0.46
Minor tributaries and immediate drainage -	197.7	3.51	Minor tributaries and immediate drainage -	57.0	1.71
Totals	665.7	13.43	Totals	1,339.8	24.15

2. Outlets -

A(1) Elk River	681.2	12.48	A(2) Elk River	1,370.1	22.89

C. Precipitation:

	Woods Reservoir	Tims Ford Reservoir	
1. Year of sampling:	197.4	197.4	centimeters.
2. Mean annual:	135.9	135.9	centimeters.

III. LAKE WATER QUALITY SUMMARY

Woods and Tims Ford Reservoirs were sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from four stations on Woods Reservoir and six stations on Tims Ford Reservoir and from one or more depths at each station (see maps, pages v and vi). During each visit, depth-integrated samples were collected from each station for chlorophyll a analysis and phytoplankton identification and enumeration. During the first visit to each reservoir, an 18.9-liter depth-integrated sample was composited for algal assays. Maximum depths sampled were 17.1 meters at Station 1, 7.6 meters at Station 2, 13.7 meters at Station 3, and 17.1 meters at Station 4 on Woods Reservoir, and 43.9 meters at Station 1, 40.8 meters at Station 2, 35.1 meters at Station 3, 21.3 meters at Station 4, 22.6 meters at Station 5, and 8.8 meters at Station 6 on Tims Ford Reservoir. For a more detailed explanation of NES methods, see NES Working Paper No. 175.

The results obtained are presented in full in Appendix C and are summarized in III A for waters at the surface and at the maximum depth for each site. Results of the phtyoplankton counts and chlorophyll a determinations are included in III B. Results of the limiting nutrient study are presented in III C.

WOODS RESERVOIR
STORET CODE 4728

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER	(5/21/73) S*** = 4 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(8/15/73) S*** = 4 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(10/23/73) S*** = 4 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)												
0.-1.5 M DEPTH	5	18.7-120.0	84.0	0.0- 1.2	8	26.7- 70.0	30.9	0.0- 1.5	9	18.8-105.0	21.0	0.0- 1.5
MAX DEPTH**	4	17.4- 18.9	17.5	2.1- 17.1	4	16.4- 25.0	21.2	3.0- 17.1	4	18.6- 20.0	19.0	1.2- 16.8
DISSOLVED OXYGEN (MG/L)												
0.-1.5 M DEPTH	1	7.2- 7.2	7.2	1.2- 1.2	4	6.8- 7.6	7.2	1.5- 1.5	5	6.4- 12.6	8.6	0.3- 1.5
MAX DEPTH**	4	3.6- 6.6	6.3	2.1- 17.1	4	0.3- 5.3	2.5	3.0- 17.1	4	1.6- 11.8	7.5	1.2- 16.8
CONDUCTIVITY (UMHOS)												
0.-1.5 M DEPTH	5	160.- 215.	170.	0.0- 1.2	8	136.- 177.	139.	0.0- 1.5	9	130.- 163.	133.	0.0- 1.5
MAX DEPTH**	4	155.- 220.	183.	2.1- 17.1	4	142.- 199.	177.	3.0- 17.1	4	145.- 163.	153.	1.2- 16.8
PH (STANDARD UNITS)												
0.-1.5 M DEPTH	5	7.7- 8.2	7.8	0.0- 1.2	8	7.8- 8.6	8.1	0.0- 1.5	9	7.5- 9.2	8.1	0.0- 1.5
MAX DEPTH**	4	7.5- 7.7	7.6	2.1- 17.1	4	7.0- 7.7	7.4	3.0- 17.1	4	7.0- 8.9	7.6	1.2- 16.8
TOTAL ALKALINITY (MG/L)												
0.-1.5 M DEPTH	5	56.- 89.	64.	0.0- 1.2	8	55.- 82.	60.	0.0- 1.5	9	67.- 95.	70.	0.0- 1.5
MAX DEPTH**	4	56.- 93.	70.	2.1- 17.1	4	77.- 97.	88.	3.0- 17.1	4	76.- 95.	88.	1.2- 16.8
TOTAL P (MG/L)												
0.-1.5 M DEPTH	5	0.011-0.037	0.016	0.0- 1.2	8	0.014-0.044	0.019	0.0- 1.5	9	0.013-0.034	0.017	0.0- 1.5
MAX DEPTH**	4	0.014-0.027	0.021	2.1- 17.1	4	0.025-0.071	0.038	3.0- 17.1	4	0.013-0.035	0.023	1.2- 16.8
DISSOLVED ORTHO P (MG/L)												
0.-1.5 M DEPTH	5	0.002-0.004	0.003	0.0- 1.2	8	0.004-0.009	0.008	0.0- 1.5	9	0.003-0.006	0.005	0.0- 1.5
MAX DEPTH**	4	0.002-0.006	0.002	2.1- 17.1	4	0.006-0.020	0.008	3.0- 17.1	4	0.004-0.006	0.005	1.2- 16.8
NO2+NO3 (MG/L)												
0.-1.5 M DEPTH	5	0.490-0.830	0.540	0.0- 1.2	8	0.050-0.220	0.080	0.0- 1.5	9	0.030-0.070	0.040	0.0- 1.5
MAX DEPTH**	4	0.490-0.920	0.590	2.1- 17.1	4	0.100-0.660	0.250	3.0- 17.1	4	0.020-0.100	0.075	1.2- 16.8
AMMONIA (MG/L)												
0.-1.5 M DEPTH	5	0.050-0.120	0.060	0.0- 1.2	8	0.060-0.090	0.075	0.0- 1.5	9	0.040-0.100	0.060	0.0- 1.5
MAX DEPTH**	4	0.070-0.130	0.125	2.1- 17.1	4	0.170-0.740	0.405	3.0- 17.1	4	0.040-0.090	0.075	1.2- 16.8
KJELDAHL N (MG/L)												
0.-1.5 M DEPTH	5	0.300-0.900	0.400	0.0- 1.2	8	0.400-1.000	0.550	0.0- 1.5	9	0.200-0.600	0.400	0.0- 1.5
MAX DEPTH**	4	0.200-0.500	0.300	2.1- 17.1	4	0.600-1.300	0.850	3.0- 17.1	4	0.200-1.100	0.300	1.2- 16.8
SECCHI DISC (METERS)	0	*****-*****	*****		0	*****-*****	*****		0	*****-*****	*****	

* N = NO. OF SAMPLES
** MAXIMUM DEPTH SAMPLED AT EACH SITE
*** S = NO. OF SITES SAMPLED ON THIS DATE

TIM*S FORD RESERVOIR
STORET CODE 4724

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER	(5/21/73) S*** = 6 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(8/15/73) S*** = 6 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(10/23/73) S*** = 6 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)												
0.-1.5 M DEPTH	6	60.0- 96.0	84.0	0.0- 0.0	12	28.3-108.0	50.6	0.0- 1.5	7	20.9-169.0	120.0	0.0- 1.5
MAX DEPTH**	6	9.4- 17.2	12.6	7.9- 43.9	6	11.7- 24.3	15.6	7.6- 42.7	6	13.3- 19.3	16.6	8.8- 40.8
DISSOLVED OXYGEN (MG/L)												
0.-1.5 M DEPTH	0	***** *****	*****	***** *****	6	1.8- 8.0	7.6	1.5- 1.5	1	8.8- 8.8	8.8	1.5- 1.5
MAX DEPTH**	6	0.8- 5.0	1.6	7.9- 43.9	6	0.2- 5.0	0.5	7.6- 42.7	5	0.2- 2.8	0.4	17.7- 40.8
CONDUCTIVITY (UMHOS)												
0.-1.5 M DEPTH	6	135.- 205.	140.	0.0- 0.0	12	127.- 143.	130.	0.0- 1.5	7	120.- 139.	121.	0.0- 1.5
MAX DEPTH**	6	140.- 260.	180.	7.9- 43.9	6	126.- 195.	166.	7.6- 42.7	6	131.- 222.	204.	8.8- 40.8
PH (STANDARD UNITS)												
0.-1.5 M DEPTH	6	8.5- 8.9	8.5	0.0- 0.0	12	8.0- 8.5	8.2	0.0- 1.5	7	7.2- 8.0	7.3	0.0- 1.5
MAX DEPTH**	6	7.2- 7.8	7.4	7.9- 43.9	6	6.7- 7.4	6.9	7.6- 42.7	5	6.8- 7.2	6.8	17.7- 40.8
TOTAL ALKALINITY (MG/L)												
0.-1.5 M DEPTH	6	49.- 93.	54.	0.0- 0.0	12	49.- 72.	57.	0.0- 1.5	7	50.- 67.	61.	0.0- 1.5
MAX DEPTH**	6	51.- 126.	71.	7.9- 43.9	6	71.- 115.	101.	7.6- 42.7	5	66.- 124.	109.	17.7- 40.8
TOTAL P (MG/L)												
0.-1.5 M DEPTH	6	0.016-0.030	0.018	0.0- 0.0	12	0.016-0.090	0.020	0.0- 1.5	7	0.017-0.037	0.026	0.0- 1.5
MAX DEPTH**	6	0.018-0.165	0.047	7.9- 43.9	6	0.018-0.167	0.106	7.6- 42.7	5	0.035-0.796	0.396	17.7- 40.8
DISSOLVED ORTHO P (MG/L)												
0.-1.5 M DEPTH	6	0.002-0.010	0.004	0.0- 0.0	12	0.004-0.015	0.007	0.0- 1.5	7	0.004-0.012	0.007	0.0- 1.5
MAX DEPTH**	6	0.006-0.087	0.016	7.9- 43.9	6	0.008-0.022	0.019	7.6- 42.7	5	0.005-0.016	0.011	17.7- 40.8
NO2+NO3 (MG/L)												
0.-1.5 M DEPTH	6	0.330-0.570	0.395	0.0- 0.0	12	0.040-0.060	0.060	0.0- 1.5	7	0.020-0.040	0.030	0.0- 1.5
MAX DEPTH**	6	0.170-0.940	0.605	7.9- 43.9	6	0.070-0.450	0.110	7.6- 42.7	5	0.020-0.120	0.030	17.7- 40.8
AMMONIA (MG/L)												
0.-1.5 M DEPTH	6	0.030-0.160	0.060	0.0- 0.0	12	0.050-0.080	0.060	0.0- 1.5	7	0.030-0.050	0.040	0.0- 1.5
MAX DEPTH**	6	0.040-0.530	0.190	7.9- 43.9	6	0.100-1.450	0.900	7.6- 42.7	5	0.340-2.420	2.000	17.7- 40.8
KJELDAHL N (MG/L)												
0.-1.5 M DEPTH	6	0.200-0.700	0.350	0.0- 0.0	12	0.200-0.700	0.350	0.0- 1.5	7	0.300-0.500	0.400	0.0- 1.5
MAX DEPTH**	6	0.200-0.600	0.350	7.9- 43.9	6	0.400-2.000	1.200	7.6- 42.7	5	0.700-2.900	2.300	17.7- 40.8
SECCHI DISC (METERS)												
	0	***** *****	*****		0	***** *****	*****		0	***** *****	*****	

* N = NO. OF SAMPLES
** MAXIMUM DEPTH SAMPLED AT EACH SITE
*** S = NO. OF SITES SAMPLED ON THIS DATE

B. Biological Characteristics:

1. Phytoplankton -

Woods Reservoir			Tims Ford Reservoir		
Sampling Date	Dominant Genera	Algal Units per ml	Sampling Date	Dominant Genera	Algal Units per ml
05/21/73	1. Asterionella	500	05/21/75	1. Flagellates	1,858
	2. Flagellates	373		2. Melosira	1,728
	3. Fragilaria	34		3. Asterionella	597
	4. Melosira	20		4. Fragilaria	160
	5. Dinobryon	15		5. Synedra	150
	Other genera	20		Other genera	214
	Total	962		Total	4,707
08/15/73	1. Scenedesmus	3,434	08/15/73	1. Achnanthes	489
	2. Flagellates	2,026		2. Flagellates	415
	3. Synedra	1,482		3. Tetraedron	228
	4. Tetraedron	518		4. Lyngbya	187
	5. Blue-green filament	346		5. Anabaena	179
	Other genera	717		Other genera	527
	Total	8,523		Total	2,025
10/23/73	1. Flagellates	1,160	10/23/73	1. Flagellates	1,343
	2. Scenedesmus	102		2. Nitzchia	290
	3. Synedra	76		3. Melosira	221
	4. Dinobryon	38		4. Achnanthes	124
	5. Melosira	25		5. Cyclotella	111
	Other genera	76		Other genera	388
	Total	1,477		Total	2,477

2. Chlorophyll a -

Woods Reservoir		
Sampling Date	Station Number	Chlorophyll a (ug/l)
05/21/73	1	13.3
	2	13.6
	3	3.1
	4	7.6
08/15/73	1	9.0
	2	5.3
	3	7.0
	4	5.1
10/23/73	1	14.0
	2	1.2
	3	4.5
	4	5.0

Tims Ford Reservoir		
Sampling Date	Station Number	Chlorophyll a (ug/l)
05/21/73	1	6.0
	2	8.3
	3	10.0
05/22/73	4	5.8
	5	5.3
	6	14.6
08/15/73	1	6.0
	2	7.5
	3	7.2
	4	8.1
	5	7.5
	6	10.1
10/23/73	1	2.1
	2	2.4
	3	2.2
	4	3.9
	5	6.0
	6	8.3

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

	Woods Reservoir			Tims Ford Reservoir		
Spike(mg/l)	Ortho P Conc.(mg/l)	Inorganic N Conc.(mg/l)	Maximum Yield (mg/l-dry wt.)	Ortho P Conc.(mg/l)	Inorganic N Conc.(mg/l)	Maximum Yield (mg/l-dry wt.)
Stations 1, 2, 3, 4				Stations 1, 2, 3		
Control	0.004	0.618	0.1	0.008	0.620	0.1
0.05 P	0.054	0.618	14.4	0.058	0.620	8.9
0.05 P + 1.0 N	0.054	1.618	18.8	0.058	1.620	16.8
1.00 N	0.004	1.618	0.1	0.008	1.620	0.1
				Stations 4, 5, 6		
Control				0.032	0.688	0.1
0.05 P				0.082	0.688	9.0
0.05 P + 1.0 N				0.082	1.688	16.7
1.00 N				0.032	1.688	0.1

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potentials for primary productivity in Woods and Tims Ford Reservoirs were low at the time of sampling. The lakes were phosphorus limited at the time as indicated by the increased growth of the test alga in response to the addition of orthophosphorus. Spikes with nitrogen and phosphorus simultaneously resulted in maximum yield while the addition of nitrogen alone did not stimulate growth beyond the control yield.

The mean total available nitrogen to orthophosphorus ratios in Woods and Tims Ford Reservoirs were respectively 25/1 or greater, and 35/1 or greater on all three sampling dates, further indicating phosphorus limitation in the two reservoirs.

IV. NUTRIENT LOADINGS
(See Appendix D for data)

For the determination of nutrient loadings, the Tennessee National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the maps (pages v and vi), except for the high runoff months of February and March when two samples were collected. Sampling was begun in April 1973 and was completed in March 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Tennessee District Office of USGS for the tributary sites nearest each lake.

In this report, nutrient loads for sampled tributaries, except Rollins Creek, Beans Creek (Woods), and Hurricane Creek (Tims Ford), were determined by using a modification of a USGS computer program for calculating stream loadings. Nutrient loads indicated for tributaries are those measured minus known point source loads, if any.

Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of USGS), Rollins Creek, Beans Creek (Woods), and Hurricane Creek (Tims Ford), were estimated by using the mean annual nutrient loads, in $kg/km^2/yr$, for Childer Creek, Gum Creek, and Unnamed Stream at Stations B(1), C(1), and H(1) on Woods Reservoir, the mean loads for Little Hurricane

Creek, Turkey Creek, and Dry Creek at Stations D(1), E(1), and G(1) on Tims Ford Reservoir, and multiplying the means by the appropriate drainage area in km^2.

The operators of the Cowan, Tullahoma, and Winchester wastewater treatment plants provided monthly effluent samples and corresponding flow data. Nutrient loads for Decherd, Motlow State Junior College, and Arnold Engineering Development Testing Area wastewater treatment plants were estimated at 1.134 kg P and 3.401 kg N/capita/yr. The Monteagle wastewater treatment plant was estimated at 1.134 kg P and 3.401 kg N/capita/yr plus loadings from 750 extra persons served during the months of July and August.

Several other point sources exist which are known to impact Woods and Tims Ford Reservoirs (Tennessee Department of Public Health, 1975). These include the University of Tennessee Space Institute Student Center and the Arnold Air Force Officers Quarters Sewage Treatment Facility, both at Woods Reservoir; the Holiday Inn and Interstate 24 Rest Area, into Gilliam Creek; St. Andrews School into Snake Rag Branch; and the Arnold Air Force J-5 Rocket Preparation Building, which impacts Rollins Creek. These sources are not included in the nutrient budget on pages 17 and 18.

A. Waste Sources:

1. Known municipal -

Name	Pop.* Served	Treatment*	Mean Flow ($m^3/d \times 10^3$)	Receiving Water*
Woods Reservoir				
Arnold Engineering Development Testing Area (AEDC)	3,300	1.	2.695	Rollins Creek
(AEDC) Arnold Village	100	2.	0.057	Brumalow Creek
Monteagle	850**	3.	0.643	Gilliams Creek/ Dry Creek/ Elk River
Tims Ford Reservoir				
Winchester	5,680	1.	1.972	Elk River
Tullahoma***	14,400	4.	10,556	Rock Creek
Cowan	1,940	1.	0.818	Boiling Fork Creek
Decherd	2,110	1.	0.799†	Wagner Creek
Motlow State Junior College	900	4.	0.341†	Hurricane Creek

Key: 1. Trickling filter
2. Activated sludge
3. Extended aeration
4. Tertiary

*Treatment plant questionnaires; S. Fishel, personal communication.
**750 additional persons served during the months of July and August.
***70% of waste load during the summer contributed by tanning industry.
†Estimated at 0.3785 m^3/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Woods Reservoir			Tims Ford Reservoir		
Source	kg P/yr	% of total	Source	kg P/yr	% of total
a. Tributaries (nonpoint load) -			a. Tributaries (nonpoint load) -		
A(2) Elk River	2,725	16.7	A(1) Elk River	14,505	26.5
B(1) Childer Creek	335	2.0	B(1) Taylor Creek	240	0.4
C(1) Gum Creek	255	1.6	C(1) Rock Creek	940	1.7
D(1) Yellow Branch	240	1.5	D(1) Little Hurricane Creek	80	0.2
E(1) Beans Creek	845	5.2	E(1) Turkey Creek	175	0.3
F(1) Bradley Creek	2,785	17.0	F(1) Hurricane Creek	175	0.3
G(1) Rollins Creek	320	2.0	G(1) Dry Creek	1,245	2.3
H(1) Unnamed Creek	45	0.3	H(1) Boiling Fork Creek	2,995	5.5
			J(1) Wagner Creek	2,255	4.1
			K(1) Hessey Branch	515	0.9
b. Minor tributaries and immediate drainage (nonpoint load) -	3,560	21.7	b. Minor tributaries and immediate drainage (nonpoint load) -	1,025	1.9
c. Known municipal STP's -			c. Known municipal STP's -		
Arnold Engineering Development Center	3,740	22.9	Winchester	6,705	12.3
			Tullahoma	17,190	31.5
Arnold Village	115	0.7	Cowan	2,420	4.4
Monteagle	1,110	6.8	Decherd	2,395	4.4
			Motlow State Jr. College	1,020	1.9
d. Septic tanks* -	5	<0.1	d. Septic tanks* -	20	<0.1
e. Known industrial - None			e. Known industrial - None		
f. Direct precipitation** -	280	1.6	f. Direct precipitation** -	750	1.4
Totals	16,360	100.0	Totals	54,650	100.0
2. Output - A(1) Elk River	12,765		A(2) Elk River	33,785	
3. Net annual P accumulation -	3,595		Net annual P accumulation -	20,865	

*Estimate based on 6 residences, 1 park, and 1 camp for Woods Reservoir.
Estimate based on 70 lakeside residences and 1 camp for Tims Ford Reservoir.
**Estimated (see NES Working Paper No. 175).

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	Woods Reservoir kg N/yr	% of total	Tims Ford Reservoir kg N/yr	% of total
a. Tributaries (nonpoint load) -				
A(1) Elk River			350,075	37.4
A(2) Elk River	195,045	33.7		
B(1) Taylor Creek			8,990	1.0
B(1) Childer Creek	10,745	1.9		
C(1) Rock Creek			68,940	7.4
C(1) Gum Creek	11,465	2.0		
D(1) Little Hurricane Creek			4,705	0.5
D(1) Yellow Branch	13,345	2.3		
E(1) Turkey Creek			4,010	0.4
E(1) Beans Creek	32,550	5.6		
F(1) Hurricane Creek			8,150	0.9
F(1) Bradley Creek	131,585	22.7		
G(1) Dry Creek			78,915	8.4
G(1) Rollins Creek	12,285	2.1		
H(1) Boiling Fork Creek			148,070	15.8
H(1) Unnamed Creek	1,875	0.3		
J(1) Wagner Creek			36,800	3.9
K(1) Hessey Creek			32,360	3.4
b. Minor tributaries and immediate drainage (nonpoint load) -	137,205	23.7	47,880	5.1
c. Known municipal STP's -				
Arnold Engineering Development Center	11,225	1.9		
Arnold Village	340	0.1		
Monteagle	3,325	0.6		
Winchester			11,300	1.2
Tullahoma			75,125	8.0
Cowan			4,490	0.5
Decherd			7,175	0.8
Motlow State Jr. College			3,060	0.3
d. Septic tanks* -	170	<0.1	815	0.1
e. Known industrial - None				
f. Direct precipitation** -	17,390	2.9	46,315	4.9
Totals	578,550	100.0	937,175	100.0
2. Output - A(1) Elk River	463,930		A(2) Elk River	617,800
3. Net annual N accumulation -	114,620		Net annual N accumulation -	319,375

*Estimate based on 6 residences, 1 park, and 1 camp for Woods Reservoir.
Estimate based on 70 lakeside residences and 1 camp for Tims Ford Reservoir.
**Estimated (see NES Working Paper No. 175).

D. Mean Annual Nonpoint Nutrient Export by Subdrainage Area:

Woods Reservoir

Tributary	kg P/km^2/yr	kg N/km^2/yr
A(2) Elk River	12	860
B(1) Childer Creek	20	643
C(1) Gum Creek	18	813
D(1) Yellow Branch	20	1,121
E(1) Beans Creek	18	694
F(1) Bradley Creek	21	1,006
G(1) Rollins Creek	18	694
H(1) Unnamed Creek	15	625

Tims Ford Reservoir

Tributary	kg P/km^2/yr	kg N/km^2/yr
A(1) Elk River	20	479
B(1) Taylor Creek	14	505
C(1) Rock Creek	9	630
D(1) Little Hurricane Creek	14	798
E(1) Turkey Creek	18	397
F(1) Hurricane Creek	18	840
G(1) Dry Creek	21	1,324
H(1) Boiling Fork Creek	11	544
J(1) Wagner Creek	52	840
K(1) Hessey Branch	19	1,202

E. Yearly Loadings:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (1975). Essentially, his "eutrophic" loading is that at which the receiving waters would become eutrophic or remain eutrophic; his "oligotrophic" loading is that which would result in the receiving water remaining oligotrophic if morphometry permitted. A "mesotrophic" loading would be considered one between "eutrophic" and "oligotrophic".

Note that Vollenweider's model may not apply to lakes with short hydraulic retention times or in which light penetration is severely restricted by high concentrations of suspended solids in the surface waters.

	Total Yearly Phosphorus Loading ($g/m^2/yr$)	
	Woods Reservoir	Tims Ford Reservoir
Estimated loading for	1.02	1.27
Vollenweider's "eutrophic" loading	0.92	0.81
Vollenweider's "oligotrophic" loading	0.46	0.40

V. LITERATURE REVIEWED

Fishel, Stephen H. 1976. Personal Communication. Tennessee Department of Public Health, Division of Water Quality Control, Nashville, Tennessee.

Tennessee Department of Public Health. 1975. "Water Quality Management Plan for the Lower Cumberland River Basin", preliminary draft, Division of Water Quality Control, Nashville, Tennessee.

U.S. Environmental Protection Agency. 1975. National Eutrophication Survey Methods 1973-1976. Working Paper No. 175. National Environmental Research Center, Las Vegas, Nevada, and Pacific Northwest Environmental Research Laboratory, Corvallis, Oregon.

Vollenweider, R. A. 1975. Input-Output Models With Special Reference to the Phosphorus Loading Concept in Limnology. Schweiz. Z. Hydrol. 37:53-84.

VI. APPENDICES

APPENDIX A

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX B

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4728 WOODS RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 681.2

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4728A1	681.2	19.74	29.73	27.33	21.38	12.57	6.17	5.15	3.88	3.34	2.97	4.53	14.16	12.48
4728A2	226.9	9.03	12.24	12.12	9.58	5.64	2.07	1.98	1.22	0.77	0.87	3.51	6.51	5.43
4728B1	16.7	0.476	0.705	0.663	0.445	0.258	0.179	0.203	0.109	0.076	0.061	0.178	0.269	0.299
4728C1	14.1	0.402	0.597	0.561	0.377	0.218	0.151	0.172	0.092	0.064	0.051	0.151	0.228	0.253
4728D1	11.9	0.340	0.504	0.473	0.317	0.184	0.127	0.145	0.078	0.054	0.043	0.127	0.192	0.214
4728E1	238.0	6.80	10.08	9.46	6.37	3.68	2.56	2.92	1.56	1.08	0.87	2.55	3.85	4.28
4728F1	130.8	3.74	5.55	5.21	3.48	2.03	1.41	1.59	0.86	0.60	0.48	1.40	2.11	2.35
4728G1	17.7	0.504	0.748	2.398	0.470	0.274	0.190	0.215	0.116	0.080	0.064	0.189	0.286	0.461
4728H1	3.0	0.084	0.124	0.399	0.078	0.045	0.031	0.036	0.019	0.013	0.011	0.031	0.048	0.077
4728Z2	6.6	0.020	0.029	0.027	0.182	0.105	0.073	0.083	0.044	0.031	0.025	0.073	0.110	0.067

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 681.2
SUM OF SUB-DRAINAGE AREAS = 665.6
TOTAL FLOW IN = 162.41
TOTAL FLOW OUT = 150.96

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4728A1	4	73	19.567	15	14.243				
	5	73	35.962	16	1.787				
	6	73	12.516	11	10.675				
	7	73	10.194	2	5.578				
	8	73	2.418	7	3.030				
	9	73	1.322	6	1.099				
	10	73	3.483	9	4.361				
	11	73	22.399	6	36.812				
	12	73	32.564	7	10.194				
	1	74	72.774	14	54.935				
	2	74	35.679	5	42.758	19	35.396		
	3	74	23.361	8	18.746	26	16.480		
4728A2	4	73	6.711	15	3.879				
	5	73	14.130	16	1.739				
	6	73	3.596	11	5.154				
	7	73	1.753	2	0.566				
	8	73	0.510	7	0.527				
	9	73	0.396	6	0.266				
	10	73	0.555	9	0.317				
	11	73	12.120	6	1.011				
	12	73	14.328	7	3.313				
	1	74	27.496	14	17.245				
	2	74	15.461	5	13.507	19	14.272		
	3	74	9.033	8	6.796	26	5.975		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4728 WOODS RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4728B1	4	73	0.462	15	0.266				
	5	73	0.968	16	0.119				
	6	73	0.246	11	0.354				
	7	73	0.120	2	0.039				
	8	73	0.035	7	0.036				
	9	73	0.027	6	0.0				
	10	73	0.038	9	0.0				
	11	73	0.830	6	0.0				
	12	73	0.983	7	0.228				
	1	74	1.886	14	1.181				
	2	74	1.059	5	0.926	19	0.977		
	3	74	0.620	8	0.467	26	0.411		
4728C1	4	73	0.391	15	0.225				
	5	73	0.818	16	0.101				
	6	73	0.208	11	0.300				
	7	73	0.102	2	0.033				
	8	73	0.029	7	0.031				
	9	73	0.023	6	0.0				
	10	73	0.032	9	0.0				
	11	73	0.702	6	0.059				
	12	73	0.833	7	0.193				
	1	74	1.594	14	1.000				
	2	74	0.898	5	0.782	19	0.827		
	3	74	0.524	8	0.394	26	0.345		
4728D1	4	73	0.328	15	0.189				
	5	73	0.691	16	0.085				
	6	73	0.175	11	0.252				
	7	73	0.086	2	0.028				
	8	73	0.025						
	9	73	0.019	6	0.0				
	10	73	0.027	9	0.0				
	11	73	0.592	6	0.0				
	12	73	0.699	7	0.162				
	1	74	1.342	14	0.841				
	2	74	0.756	5	0.660	19	0.697		
	3	74	0.442	8	0.331	26	0.292		
4728E1	4	73	2.673	15	3.794				
	5	73	13.847	16	1.705				
	6	73	3.511	11	5.040				
	7	73	1.716						
	8	73	0.498	7	0.515				
	9	73	0.388	6	0.261				
	10	73	0.544	9	0.309				
	11	73	11.865	6	0.991				
	12	73	14.045	7	3.256				
	1	74	26.929	14	16.877				
	2	74	15.150	5	13.224	19	13.989		
	3	74	8.835	8	6.654	26	5.862		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4728 WOODS RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4728F1	4	73	3.625	15	2.087				
	5	73	7.617	16	0.937				
	6	73	1.931	11	2.775				
	7	73	0.943	2	0.306				
	8	73	0.275	7	0.283				
	9	73	0.213	6	0.143				
	10	73	0.300	9	0.170				
	11	73	6.513	6	0.544				
	12	73	7.730	7	1.787				
	1	74	14.725	14	9.288				
	2	74	8.325	5	7.277	19	7.674		
	3	74	4.870	8	3.653	26	3.228		
4728G1	4	73	0.490	15	0.283				
	5	73	1.031	16	0.127				
	6	73	0.262	11	0.377				
	7	73	0.128	2	0.041				
	8	73	0.037	7	0.039				
	9	73	0.029	6	0.019				
	10	73	0.040	9	0.023				
	11	73	0.883	6	0.074				
	12	73	1.048	7	0.242				
	1	74	2.008	14	1.260				
	2	74	1.130	5	0.985	19	1.042		
	3	74	0.660	8	0.496	26	0.436		
4728H1	4	73	0.082	15	0.047				
	5	73	0.172	16	0.021				
	6	73	0.044	11	0.063				
	7	73	0.021	2	0.007				
	8	73	0.006	7	0.007				
	9	73	0.005	6	0.003				
	10	73	0.007	9	0.004				
	11	73	0.147	6	0.012				
	12	73	0.174	7	0.040				
	1	74	0.334	14	0.210				
	2	74	0.188	5	0.164	19	0.173		
	3	74	0.110	8	0.496	26	0.436		
4728Z7	4	73	0.146						
	5	73	0.396						
	6	73	0.101						
	7	73	0.049						
	8	73	0.014						
	9	73	0.011						
	10	73	0.016						
	11	73	0.340						
	12	73	0.402						
	1	74	0.770						
	2	74	0.433						
	3	74	0.253						

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4724 TIMS FORD RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 1363.1

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4724A1	730.4	20.61	30.87	28.60	22.20	13.05	6.51	5.52	4.08	3.48	3.09	4.87	14.67	13.03
4724A2	1383.1	25.82	16.28	17.16	8.21	10.76	8.01	12.26	19.11	39.08	32.56	19.11	65.13	22.89
4724B1	17.8	0.394	0.552	0.818	0.597	0.419	0.121	0.110	0.078	0.040	0.052	0.127	0.337	0.303
4724C1	106.7	2.36	3.31	4.93	3.60	2.52	0.72	0.66	0.47	0.24	0.31	0.76	2.03	1.82
4724D1	5.9	0.131	0.184	0.274	0.200	0.140	0.040	0.037	0.026	0.013	0.017	0.042	0.113	0.101
4724E1	10.1	0.223	0.221	0.462	0.337	0.236	0.068	0.062	0.044	0.022	0.029	0.071	0.190	0.164
4724F1	9.7	0.215	0.303	0.447	0.326	0.229	0.066	0.060	0.043	0.022	0.029	0.069	0.185	0.165
4724G1	59.6	1.32	1.85	2.75	2.00	1.41	0.40	0.37	0.26	0.13	0.17	0.42	1.13	1.02
4724H1	271.9	6.00	8.44	12.54	9.15	6.43	1.85	1.69	1.20	0.61	0.80	1.94	5.18	4.63
4724J1	43.8	0.966	1.359	2.019	1.475	1.034	0.297	0.272	0.193	0.098	0.128	0.311	0.833	0.746
4724K1	26.9	0.595	0.835	1.243	0.906	0.637	0.183	0.168	0.119	0.060	0.079	0.192	0.513	0.459
4724Z2	57.0	2.21	3.11	4.62	3.37	2.37	0.68	0.62	0.44	0.22	0.29	0.72	1.91	1.71

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1383.1
SUM OF SUB-DRAINAGE AREAS = 1339.8

TOTAL FLOW IN = 291.42
TOTAL FLOW OUT = 273.51

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4724A1	4	73	20.416	15	14.725				
	5	73	37.661	15	6.881				
	6	73	12.969	11	11.327				
	7	73	10.421	2	5.663				
	8	73	2.483	7	3.087				
	9	73	1.373	7	1.104				
	10	73	3.568	5	2.860				
	11	73	23.956	4	4.587				
	12	73	34.263	7	33.414				
	1	74	76.455	13	78.721				
	2	74	37.661	8	33.980	25	26.391		
	3	74	24.522	8	19.624	29	19.907		
4724A2	4	73	30.016	15	16.990				
	5	73	26.221	15	21.804				
	6	73	56.067	11	90.614				
	7	73	18.859	2	22.653				
	8	73	12.459	7	7.561				
	9	73	9.260	7	15.093				
	10	73	22.285	5	25.967				
	11	73	37.661	4	30.299				
	12	73	69.093	7	90.614				
	1	74	133.656	13	248.056				
	2	74	90.897	8	91.180	25	91.747		
	3	74	63.147	8	91.747	29	60.315		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4724 TIMS FORD RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4724B1	4	73	0.382	15	14.725				
	5	73	1.124	15	0.146				
	6	73	0.158	11	0.213				
	7	73	0.101	2	0.034				
	8	73	0.030	7	0.039				
	9	73	0.029	7	0.020				
	10	73	0.040	5	0.029				
	11	73	0.884	4	0.098				
	12	73	1.048	7	0.243				
	1	74	2.010	13	1.971				
	2	74	1.130	8	0.920	25	0.640		
	3	74	0.660	8	0.498	29	0.405		
4724C1	4	73	2.302	15	1.705				
	5	73	6.739	15	0.875				
	6	73	0.949	11	1.277				
	7	73	0.606	2	0.204				
	8	73	0.180	7	0.233				
	9	73	0.174	7	0.117				
	10	73	0.244	5	0.176				
	11	73	5.097	4	0.583				
	12	73	6.286	7	1.458				
	1	74	12.063	13	11.836				
	2	74	6.796	8	5.522	25	3.851		
	3	74	3.964	8	2.973	29	2.438		
4724D1	4	73	0.128	15	0.095				
	5	73	0.374	15	0.049				
	6	73	0.053	11	0.071				
	7	73	0.034	2	0.011				
	8	73	0.010	7	0.013				
	9	73	0.010	7	0.007				
	10	73	0.014	5	0.010				
	11	73	0.283	4	0.032				
	12	73	0.351	7	0.081				
	1	74	0.671	13	0.657				
	2	74	0.377	8	0.309	25	0.213		
	3	74	0.221	8	0.166	29	0.136		
4724E1	4	73	0.314	15	0.161				
	5	73	0.513	15	0.083				
	6	73	0.123	11	0.223				
	7	73	0.059	2	0.008				
	8	73	0.005	7	0.022				
	9	73	0.016	7	0.011				
	10	73	0.023	5	0.017				
	11	73	0.481	4	0.055				
	12	73	0.595	7	0.138				
	1	74	1.141	13	1.116				
	2	74	0.640	8	0.521	25	0.362		
	3	74	0.374	8	0.282	29	0.230		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4724 TIMS FORD RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4724F1	4	73	0.269	15	0.155				
	5	73	0.566	15	0.080				
	6	73	0.043	11	0.215				
	7	73	0.057	2	0.022				
	8	73	0.057	7	0.021				
	9	73	0.016	7	0.011				
	10	73	0.022	5	0.016				
	11	73	0.464	4	0.053				
	12	73	0.572	7	0.133				
	1	74	1.099	13	1.076				
	2	74	0.617	8	0.504	25	0.348		
	3	74	0.362	8	0.272	29	0.222		
4724G1	4	73	2.112	15	0.951				
	5	73	3.455	15	0.487				
	6	73	1.002	11	1.218				
	7	73	0.249	2	0.208				
	8	73	0.186	7	0.130				
	9	73	0.097	7	0.065				
	10	73	0.136	5	0.0				
	11	73	2.837	4	0.326				
	12	73	3.511	7	0.816				
	1	74	6.739	13	6.598				
	2	74	3.794	8	3.087	25	2.144		
	3	74	2.214	8	1.668	29	1.362		
4724H1	4	73	7.532	15	4.332				
	5	73	15.829	15	2.231				
	6	73	4.021	11	5.550				
	7	73	1.504	2	1.354				
	8	73	1.441	7	0.595				
	9	73	0.442	7	0.297				
	10	73	0.620	5	0.450				
	11	73	12.969	4	1.487				
	12	73	16.056	7	3.710				
	1	74	30.865	13	30.299				
	2	74	17.302	8	14.102	25	9.769		
	3	74	10.109	8	7.617	29	6.201		
4724J1	4	73	1.212	15	0.699				
	5	73	2.546	15	0.0				
	6	73	0.473	11	0.685				
	7	73	0.275	2	0.134				
	8	73	0.204	7	0.0				
	9	73	0.071	7	0.0				
	10	73	0.100	5	0.0				
	11	73	2.087	4	0.0				
	12	73	2.585	7	0.600				
	1	74	4.955	13	4.842				
	2	74	2.786	8	2.268	25	1.574		
	3	74	1.628	8	1.226	29	1.000		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4724 TIMS FORD RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
472451	4	73	0.954	15	0.430				
	5	73	1.566	15	0.221				
	6	73	0.660	11	0.940				
	7	73	0.247	2	0.074				
	8	73	0.069	7	0.0				
	9	73	0.044	7	0.0				
	10	73	0.061	5	0.0				
	11	73	1.283	4	0.0				
	12	73	1.591	7	0.368				
	1	74	3.058	13	2.973				
	2	74	1.713	8	1.396	25	0.968		
	3	74	1.002	8	0.753	29	0.614		
472422	4	73	2.772						
	5	73	5.833						
	6	73	1.478						
	7	73	0.722						
	8	73	0.208						
	9	73	0.163						
	10	73	0.229						
	11	73	4.984						
	12	73	5.918						
	1	74	11.355						
	2	74	6.371						
	3	74	3.738						

APPENDIX C

PHYSICAL AND CHEMICAL DATA

STORET RETRIEVAL DATE 76/09/10

472801
35 17 52.0 086 05 46.0 3
WOODS RESERVOIR
47051 TENNESSEE

040692

11EPALES 21112U2
0011 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	C0010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	10 20 0000		19.3		28	215	7.80	87	0.110	0.900	0.750	0.003
	10 20 0004		18.7	7.2		200	7.70	89	0.120	0.400	0.830	0.004
	10 20 0007		17.6	6.6		220	7.70	93	0.130	0.400	0.920	0.006
73/08/15	10 20 0000		27.6		70	137	8.00	57	0.080	0.800	0.080	0.009
	10 20 0005		27.4	7.0		137	7.80	55	0.060	0.500	0.060	0.009
	10 20 0015		27.3	4.0		138	7.50	56	0.080	0.500	0.060	0.009
	10 20 0025		23.6	0.0		141	7.10	66	0.260	0.500	0.060	0.014
	10 20 0040		19.5	0.0		134	6.90	68	0.400	0.800	0.070	0.008
	10 20 0056		18.4	0.3		142	7.00	77	0.570	1.100	0.100	0.008
73/10/23	16 07 0000		19.8		68	150	9.20	81	0.040	0.400	0.040	0.004
	16 07 0001		18.8	12.6		150	9.10	88	0.040	0.300	0.040	0.006
	16 07 0004		19.0	11.8		163	8.90	95	0.040	0.200	0.070	0.005

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	10 20 0000		0.030	13.3
	10 20 0004		0.037	
	10 20 0007		0.026	
73/08/15	10 20 0000		0.016	9.0
	10 20 0005		0.019	
	10 20 0015		0.019	
	10 20 0025		0.019	
	10 20 0040		0.018	
	10 20 0056		0.029	
73/10/23	16 07 0000		0.017	14.0
	16 07 0001		0.029	
	16 07 0004		0.024	

STORET RETRIEVAL DATE 76/09/10

472802
35 17 56.0 086 03 33.0 3
WOODS RESERVOIR
47051 TENNESSEE
040692

11EPALES 2111202
0029 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	11	05 0000	20.3		84	170	8.00	64	0.060	0.500	0.540	0.004
	11	05 0006	20.0	8.4		180	8.00	71	0.050	0.400	0.540	0.002
	11	05 0015	19.7	7.8		180	7.90	72	0.060	0.400	0.540	0.003
	11	05 0025	18.9	6.6		200	7.70	81	0.130	0.500	0.640	0.002
73/08/15	10	50 0000	28.3		52	141	8.20	60	0.080	0.900	0.080	0.006
	10	50 0005	27.7	6.8		148	8.00	63	0.080	0.400	0.080	0.009
	10	50 0015	27.4	4.4		167	7.50	71	0.180	0.500	0.160	0.008
	10	50 0020	25.0	4.6		197	7.20	91	0.240	0.600	0.380	0.008
73/10/23	15	50 0000	20.6		105	133	8.20	69	0.060	0.300	0.040	0.003
	15	50 0005	20.2	8.6		133	8.10	70	0.050	0.300	0.050	0.005
	15	50 0015	20.0	8.2		136	8.00	73	0.060	0.300	0.060	0.004
	15	50 0023	18.6	8.2		153	7.80	87	0.080	0.300	0.100	0.005

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	11	05 0000	0.011	13.6
	11	05 0006	0.012	
	11	05 0015	0.013	
	11	05 0025	0.014	
73/08/15	10	50 0000	0.015	5.3
	10	50 0005	0.020	
	10	50 0015	0.023	
	10	50 0020	0.025	
73/10/23	15	50 0000	0.013	1.2
	15	50 0005	0.013	
	15	50 0015	0.013	
	15	50 0023	0.013	

STORET RETRIEVAL DATE 76/09/10

472803
35 18 59.0 086 04 10.0 3
WOODS RESERVOIR
47051 TENNESSEE
040692

11EPALES 2111262
0046 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	11	30 0000	20.4		120	160	7.70	56	0.050	0.300	0.540	0.002K
	11	30 0006	19.7	8.6		160	7.90	56	0.040	0.200K	0.540	0.002K
	11	30 0015	19.6	8.4		145	7.90	55	0.040	0.200K	0.530	0.002
	11	30 0025	19.0	7.2		155	7.70	52	0.040	0.200K	0.530	0.006
	11	30 0035	17.9	5.4		160	7.60	54	0.060	0.200K	0.530	0.002K
	11	30 0044	17.5	3.6		165	7.50	59	0.120	0.200K	0.490	0.002K
73/08/15	11	10 0000	28.1		70	136	8.60	59	0.060	0.600	0.050	0.004
	11	10 0005	27.9	7.6		136	8.50	59	0.060	0.500	0.090	0.007
	11	10 0015	27.7	7.0		136	8.20	58	0.050	0.400	0.050	0.006
	11	10 0025	23.3	0.0		155	7.20	78	0.330	0.600	0.050	0.006
	11	10 0035	20.2	0.1		157	7.10	83	0.690	1.000	0.110	0.005
	11	10 0044	19.4	0.4		156	7.60	85	0.740	1.300	0.120	0.006
73/10/23	15	33 0000	21.0		84	132	7.80	68	0.080	0.600	0.040	0.005
	15	33 0005	21.0	8.2		131	7.80	67	0.060	0.400	0.030	0.004
	15	33 0015	21.0	7.2		131	7.60	66	0.060	0.300	0.030	0.003
	15	33 0025	20.0	6.6		135	7.40	69	0.080	0.300	0.060	0.003
	15	33 0045	19.0	6.8		145	7.40	76	0.090	0.300	0.080	0.004

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	11	30 0000	0.013	3.1
	11	30 0006	0.012	
	11	30 0015	0.015	
	11	30 0025	0.014	
	11	30 0035	0.017	
	11	30 0044	0.027	
73/08/15	11	10 0000	0.014	7.0
	11	10 0005	0.019	
	11	10 0015	0.016	
	11	10 0025	0.016	
	11	10 0035	0.022	
	11	10 0044	0.071	
73/10/23	15	33 0000	0.014	4.5
	15	33 0005	0.015	
	15	33 0015	0.013	
	15	33 0025	0.015	
	15	33 0045	0.035	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472804
35 18 57.0 086 00 46.0 3
WOODS RESERVOIR
47051 TENNESSEE

040692

11EPALES 2111202
0060 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	13	30 0000	21.4		84	160	8.20	57	0.050	0.400	0.490	0.003
	13	30 0006	21.1	9.4		150	8.40	57	0.020	0.200K	0.490	0.002K
	13	30 0015	19.4	8.6		150	8.10	56	0.030	0.200K	0.510	0.002K
	13	30 0030	18.8	6.4		155	7.80	55	0.050	0.200K	0.520	0.002K
	13	30 0045	17.7	6.0		150	7.60	55	0.060	0.200K	0.560	0.002K
	13	30 0056	17.4	6.0		155	7.60	56	0.070	0.200	0.540	0.002
73/08/15	11	50 0000	28.0		34	177	8.20	79	0.070	1.000	0.080	0.005
	11	50 0005	26.7	7.4		176	8.00	82	0.090	0.500	0.220	0.009
	11	50 0010	23.1	5.3		199	7.70	97	0.170	0.600	0.660	0.020
73/10/23	15	10 0000	20.8		72	130	7.50	70	0.100	0.600	0.050	0.005
	15	10 0005	20.7	6.4		130	7.50	70	0.090	0.400	0.050	0.003
	15	10 0015	20.7	6.4		130	7.30	70	0.090	0.300	0.030	0.003
	15	10 0030	20.6	5.8		130	7.30	71	0.100	0.400	0.030	0.010
	15	10 0055	20.0	1.6		153	7.00	88	0.070	1.100	0.020	0.006

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	13	30 0000	0.016	7.6
	13	30 0006	0.017	
	13	30 0015	0.015	
	13	30 0030	0.011	
	13	30 0045	0.012	
	13	30 0056	0.017	
73/08/15	11	50 0000	0.044	5.1
	11	50 0005	0.039	
	11	50 0010	0.047	
73/10/23	15	10 0000	0.018	5.0
	15	10 0005	0.034	
	15	10 0015	0.017	
	15	10 0030	0.013	
	15	10 0055	0.023	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472401
35 12 00.0 086 16 45.0 3
TIMES FORD RESERVOIR
47051 TENNESSEE

040691

11EPALES 2111202
0148 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	14	15 0000	21.7		90	140	8.80	52	0.060	0.500	0.380	0.005
	14	15 0006	20.4	10.2		135	8.90	51	0.020	0.200	0.320	0.002K
	14	15 0015	19.9	10.0		140	8.80	51	0.020	0.200	0.340	0.002K
	14	15 0025	17.5	6.8		140	8.00	51	0.040	0.200K	0.420	0.002K
	14	15 0040	15.9	6.6		140	7.80	56	0.030	0.200	0.540	0.002
	14	15 0060	13.8	5.2		140	7.70	56	0.040	0.300	0.620	0.004
	14	15 0080	13.2	6.8		140	7.60	56	0.030	0.200	0.620	0.010
	14	15 0100	11.3	4.8		160	7.50	64	0.030	0.200	0.700	0.013
	14	15 0125	9.4	2.4		160	7.40	64	0.030	0.200	0.780	0.016
	14	15 0144	9.4	2.2		170	7.30	64	0.040	0.200	0.760	0.009
73/08/15	13	35 0000	28.6		108	127	8.40	58	0.060	0.700	0.060	0.005
	13	35 0005	28.6	7.6		129	8.20	56	0.060	0.600	0.060	0.008
	13	35 0020	26.5	2.2		131	7.50	61	0.070	0.500	0.070	0.008
	13	35 0035	20.5	0.2		120	7.20	63	0.080	0.400	0.250	0.007
	13	35 0050	18.8	0.1		115	7.10	62	0.050	0.200K	0.560	0.012
	13	35 0075	16.4	0.5		107	7.00	62	0.050	0.200K	0.610	0.010
	13	35 0100	14.0	0.2		110	6.90	74	0.360	0.600	0.460	0.018
	13	35 0125	12.2	0.6		145	6.90	96	0.870	1.200	0.070	0.026
	13	35 0140	11.7	0.3		152	6.90	97	1.130	1.600	0.090	0.022
73/10/23	11	03 0000	21.8		168	120	7.20	58	0.050	0.500	0.030	0.006
	11	03 0010	21.8	5.8		121	7.20	59	0.040	0.200K	0.020	0.007
	11	03 0030	21.6	5.8		120	7.30	59	0.030	0.200K	0.020	0.007
	11	03 0040	21.5	1.0		120	7.00	60	0.040	0.200	0.020	0.014
	11	03 0050	19.6	0.5		119	6.90	61	0.030	0.200K	0.050	0.011
	11	03 0090	17.1	0.4		126	6.80	71	0.070	0.200	0.170	0.018
	11	03 0130	13.8	0.2		196	6.80	109	2.000	2.300	0.030	0.011

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472401
35 12 00.0 086 16 45.0 3
TIMES FORD RESERVOIR
47051 TENNESSEE
040691

11EMALES 2111202
0148 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	14 15	0000	0.017	6.0
	14 15	0006	0.014	
	14 15	0015	0.017	
	14 15	0025	0.011	
	14 15	0040	0.010	
	14 15	0060	0.012	
	14 15	0080	0.018	
	14 15	0100	0.020	
	14 15	0125	0.018	
	14 15	0144	0.018	
73/08/15	13 35	0000	0.017	6.0
	13 35	0005	0.017	
	13 35	0020	0.016	
	13 35	0035	0.014	
	13 35	0050	0.012	
	13 35	0075	0.012	
	13 35	0100	0.029	
	13 35	0125	0.055	
	13 35	0140	0.100	
73/10/23	11 03	0000	0.023	2.1
	11 03	0010	0.014	
	11 03	0030	0.014	
	11 03	0040	0.020	
	11 03	0050	0.014	
	11 03	0090	0.023	
	11 03	0130	0.396	

STORET RETRIEVAL DATE 76/09/10

472402
35 13 15.0 086 16 35.0 3
TIM*S FORD RESERVOIR
47051 TENNESSEE
040691

11EPALES 2111202
0102 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	15 00	0000	21.3		78	146	8.90	49	0.030	0.200	0.330	0.002K
	15 00	0006	20.0	9.6		140	8.50	51	0.020	0.300	0.310	0.003
	15 00	0015	19.0	7.0		140	7.90	52	0.040	0.300	0.360	0.004
	15 00	0025	18.0	7.8		140	7.80	51	0.040	0.300	0.410	0.007
	15 00	0040	15.9	5.2		150	7.70	53	0.020	0.200	0.560	0.002
	15 00	0055	14.2	6.2		145	7.60	52	0.020	0.200K	0.590	0.005
	15 00	0070	13.6	4.4		150	7.50	55	0.020	0.200K	0.610	0.010
	15 00	0085	13.1	3.2		150	7.40	57	0.030	0.200K	0.620	0.014
	15 00	0098	11.9	1.0		190	7.30	79	0.530	0.600	0.170	0.019
73/08/15	14 10	0000	28.8		90	129	8.30	53	0.080	0.500	0.060	0.005
	14 10	0005	28.6	8.0		129	8.20	49	0.060	0.300	0.060	0.011
	14 10	0020	25.7	0.2		131	7.40	56	0.050	0.200	0.080	0.009
	14 10	0035	20.1	0.2		117	7.20	55	0.070	0.200	0.240	0.009
	14 10	0050	19.0	0.1		115	7.10	57	0.070	0.200K	0.500	0.009
	14 10	0075	16.6	1.2		109	7.00	59	0.050	0.200K	0.600	0.011
	14 10	0100	14.5	0.1		112	6.90	78	0.530	0.500	0.290	0.030
	14 10	0125	12.3	0.1		149	6.80	95	1.000	1.500	0.100	0.014
	14 10	0134	11.8	0.2		164	6.90	105	1.450	2.000	0.100	0.008
73/10/23	10 12	0000	21.9		144	121	7.30	50	0.030	0.300	0.040	0.012
	10 12	0010	21.9	6.2		121	7.30	49	0.020	0.200K	0.020	0.008
	10 12	0025	21.9	6.0		122	7.30	49	0.020	0.200K	0.020	0.008
	10 12	0040	21.6	3.8		121	7.00	57	0.030	0.200K	0.020	0.009
	10 12	0050	19.5	0.4		120	6.90	61	0.050	0.200K	0.060	0.012
	10 12	0080	17.6	0.4		122	6.80	64	0.080	0.200K	0.130	0.018
	10 12	0120	14.5	0.1		184	6.80	103	1.700	2.000	0.030	0.010
	10 12	0134	13.3	0.2		222	6.80	124	2.420	2.900	0.020	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472402
35 13 15.0 086 16 35.0 3
TIM'S FORD RESERVOIR
47051 TENNESSEE
040691

11EPALES 2111202
0102 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	15 00	0000	0.018	8.3
	15 00	0006	0.018	
	15 00	0015	0.019	
	15 00	0025	0.012	
	15 00	0040	0.011	
	15 00	0055	0.012	
	15 00	0070	0.026	
	15 00	0085	0.027	
	15 00	0098	0.046	
73/08/15	14 10	0000	0.017	7.5
	14 10	0005	0.021	
	14 10	0020	0.018	
	14 10	0035	0.018	
	14 10	0050	0.013	
	14 10	0075	0.014	
	14 10	0100	0.035	
	14 10	0125	0.106	
	14 10	0134	0.155	
73/10/23	10 12	0000	0.018	2.4
	10 12	0010	0.018	
	10 12	0025	0.016	
	10 12	0040	0.016	
	10 12	0050	0.017	
	10 12	0080	0.026	
	10 12	0120	0.391	
	10 12	0134	0.796	

STORET RETRIEVAL DATE 76/09/10

472403
35 12 10.0 086 14 35.0 3
TIMS FORD RESERVOIR
47051 TENNESSEE

040891

11EPALES 2111202
0115 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/21	15 45	0000	22.1		90	135	8.50	49	0.080	0.700	0.410	0.004
	15 45	0006	20.2	10.4		130	8.80	48	0.040	0.500	0.380	0.030
	15 45	0015	19.7	6.2		135	8.00	47	0.040	0.400	0.470	0.003
	15 45	0030	16.6	6.4		135	7.70	48	0.030	0.300	0.560	0.004
	15 45	0045	15.4	6.8		135	7.60	45	0.040	0.200	0.630	0.011
	15 45	0060	13.8	6.0		135	7.60	45	0.020	0.300	0.640	0.011
	15 45	0075	13.3	5.4		135	7.40	46	0.020	0.200	0.630	0.014
	15 45	0090	12.5	4.8		140	7.30	49	0.040	0.300	0.650	0.015
	15 45	0111	10.4	0.8		190	7.20	78	0.400	0.600	0.320	0.015
73/08/15	15 00	0000	29.5		108	130	8.10	55	0.070	0.400	0.060	0.004
	15 00	0005	29.2	7.6		130	8.00	52	0.060	0.200	0.040	0.009
	15 00	0020	26.0	2.4		128	7.20	56	0.060	0.200	0.060	0.010
	15 00	0035	20.4	0.1		116	7.00	57	0.080	0.200K	0.240	0.009
	15 00	0050	18.9	0.1		122	6.90	63	0.070	0.200K	0.560	0.011
	15 00	0075	16.5	0.2		123	6.80	66	0.050	0.200K	0.680	0.011
	15 00	0109	13.7	0.4		167	6.70	106	1.240	1.600	0.120	0.019
73/10/23	11 34	0000	22.0		169	121	7.30	61	0.040	0.400	0.030	0.007
	11 34	0010	21.9	6.4		121	7.30	61	0.040	0.200	0.020	0.008
	11 34	0030	21.7	4.6		123	7.10	62	0.030	0.200	0.020	0.009
	11 34	0045	19.9	0.6		123	6.80	65	0.030	0.200	0.030	0.010
	11 34	0075	17.6	0.8		148	6.70	83	0.130	0.300	0.240	0.027
	11 34	0115	14.9	0.4		212	6.80	113	2.280	2.800	0.040	0.013

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472403
35 12 10.0 086 14 35.0 3
TIMS FORD RESERVOIR
47051 TENNESSEE
040891

11EPALES 2111202
0115 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/21	15 45	0000	0.019	10.0
	15 45	0006	0.019	
	15 45	0015	0.021	
	15 45	0030	0.014	
	15 45	0045	0.016	
	15 45	0060	0.052	
	15 45	0075	0.029	
	15 45	0090	0.051	
	15 45	0111	0.043	
73/08/15	15 00	0000	0.017	7.2
	15 00	0005	0.019	
	15 00	0020	0.019	
	15 00	0035	0.016	
	15 00	0050	0.015	
	15 00	0075	0.021	
	15 00	0109	0.167	
73/10/23	11 34	0000	0.029	2.2
	11 34	0010	0.015	
	11 34	0030	0.015	
	11 34	0045	0.018	
	11 34	0075	0.039	
	11 34	0115	0.485	

STORET RETRIEVAL DATE 76/09/10

472404
35 15 15.0 086 15 15.0 3
TIM'S FORD RESERVOIR
47051 TENNESSEE
040692

11EPALES 2111202
0074 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/22	10 00	0000	20.4		72	135	8.50	55	0.060	0.400	0.330	0.005
	10 00	0006	19.9	10.2		130	8.70	53	0.040	0.200	0.330	0.002K
	10 00	0015	19.3	7.2		130	8.00	53	0.040	0.200	0.360	0.005
	10 00	0030	17.1	5.8		135	7.80	53	0.040	0.200K	0.490	0.012
	10 00	0045	15.1	5.0		125	7.70	49	0.030	0.200K	0.570	0.011
	10 00	0057	14.2	4.2		130	7.60	51	0.030	0.200	0.590	0.016
	10 00	0070	13.6	3.8		140	7.50	51	0.040	0.200	0.590	0.018
73/08/15	15 35	0000	29.3		100	129	8.20	56	0.070	0.400	0.060	0.005
	15 35	0005	29.1	1.8		129	8.00	57	0.060	0.200K	0.060	0.007
	15 35	0020	26.1	1.0		130	7.20	62	0.060	0.200K	0.060	0.007
	15 35	0048	19.7	0.1		114	7.00	61	0.110	0.200K	0.210	0.009
	15 35	0065	17.5	0.6		126	6.90	71	0.490	0.700	0.070	0.009
73/10/23	12 03	0000	21.7		120	120	7.20	62	0.040	0.500	0.030	0.007
	12 03	0010	21.7	6.4		120	7.20	62	0.040	0.200	0.020	0.007
	12 03	0025	21.6	6.6		120	7.20	60	0.030	0.200K	0.020	0.007
	12 03	0045	21.3	6.0		120	7.20	57	0.030	0.200K	0.020	0.009
	12 03	0059	18.7	2.8		131	7.20	66	0.550	0.700	0.030	0.016

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/22	10 00	0000	0.022	5.8
	10 00	0006	0.027	
	10 00	0015	0.024	
	10 00	0030	0.022	
	10 00	0045	0.023	
	10 00	0057	0.029	
	10 00	0070	0.048	
73/08/15	15 35	0000	0.024	8.1
	15 35	0005	0.021	
	15 35	0020	0.020	
	15 35	0048	0.016	
	15 35	0065	0.113	
73/10/23	12 03	0000	0.032	3.9
	12 03	0010	0.019	
	12 03	0025	0.016	
	12 03	0045	0.020	
	12 03	0059	0.047	

K VALUE KNOWN TO BE LESS THAN INDICATED.

STORET RETRIEVAL DATE 76/09/10

472405
35 12 45.0 086 09 20.0 3
TIMES FORD RESERVOIR
47051 TENNESSEE

040891

11EPALES 2111202
0078 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/22	10 45	0000	21.3		96	160	8.50	70	0.030	0.300	0.460	0.002
	10 45	0006	20.9	9.6		150	8.50	63	0.030	0.200	0.430	0.007
	10 45	0015	20.1	5.4		225	7.80	65	0.040	0.200	0.480	0.006
	10 45	0030	17.2	5.0		175	7.70	95	0.050	0.200	0.850	0.008
	10 45	0045	15.1	3.6		150	7.60	71	0.040	0.200	0.770	0.029
	10 45	0060	13.8	2.2		155	7.50	59	0.160	0.300	0.810	0.167
	10 45	0074	13.4	1.0		160	7.50	63	0.300	0.500	0.620	0.087
73/08/15	16 10	0000	29.2		90	134	8.30	60	0.060	0.400	0.050	0.004
	16 10	0005	28.7	7.6		133	8.20	62	0.050	0.200	0.050	0.015
	16 10	0020	26.9	1.6		145	7.20	104	0.120	0.200	0.510	0.009
	16 10	0040	20.2	0.2		193	7.00	105	0.170	0.300	0.590	0.011
	16 10	0064	17.8	0.8		194	6.90	115	0.670	0.800	0.180	0.022
73/10/23	12 24	0000	21.9		108	136	7.50	58	0.040	0.300	0.040	0.007
	12 24	0010	21.6	7.4		135	7.50	58	0.040	0.200K	0.030	0.007
	12 24	0020	21.5	7.0		134	7.50	63	0.040	0.200K	0.030	0.004
	12 24	0040	20.8	4.8		137	7.10	65	0.100	0.400	0.070	0.004
	12 24	0058	19.3	2.6		140	7.00	71	0.340	0.700	0.120	0.005

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/22	10 45	0000	0.016	5.3
	10 45	0006	0.023	
	10 45	0015	0.026	
	10 45	0030	0.028	
	10 45	0045	0.121	
	10 45	0060	0.205	
	10 45	0074	0.165	
73/08/15	16 10	0000	0.090	7.5
	16 10	0005	0.016	
	16 10	0020	0.018	
	16 10	0040	0.015	
	16 10	0064	0.018	
73/10/23	12 24	0000	0.017	6.0
	12 24	0010	0.021	
	12 24	0020	0.022	
	12 24	0040	0.022	
	12 24	0058	0.035	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/10

472406
35 12 10.0 086 07 25.0 3
TIM'S FORD RESERVOIR
47051 TENNESSEE

040692

11EPALES 2111202
0030 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/22	11	20 0000	21.8		66	205	8.60	93	0.160	0.300	0.570	0.010
	11	20 0006	21.4	10.4		190	8.70	92	0.030	0.200	0.500	0.007
	11	20 0015	20.0	8.0		215	8.00	98	0.040	0.200	0.610	0.009
	11	20 0026	17.2	5.0		260	7.80	126	0.080	0.200	0.940	0.006
73/08/15	16	25 0000	28.4		72	142	8.50	70	0.070	0.300	0.060	0.008
	16	25 0005	28.3	7.4		143	8.40	72	0.050	0.200	0.060	0.008
	16	25 0015	28.2	7.0		143	7.80	63	0.070	0.300	0.060	0.007
	16	25 0025	24.3	5.0		195	7.40	96	0.100	0.400	0.450	0.020
73/10/23	12	52 0000	21.0		70	138	7.70	65	0.040	0.500	0.030	0.004
	12	52 0005	20.9	8.8		139	8.00	67	0.030	0.400	0.020	0.004
	12	52 0015	20.8	8.4		137	7.80	70	0.030	0.300	0.020	0.004
	12	52 0025	20.2	7.4		169	7.50	87	0.050	0.300	0.180	0.005
	12	52 0029	18.3			213						

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/22	11	20 0000	0.030	14.6
	11	20 0006	0.028	
	11	20 0015	0.028	
	11	20 0026	0.048	
73/08/15	16	25 0000	0.048	10.1
	16	25 0005	0.023	
	16	25 0015	0.026	
	16	25 0025	0.051	
73/10/23	12	52 0000	0.026	8.3
	12	52 0005	0.037	
	12	52 0015	0.028	
	12	52 0025	0.041	

APPENDIX D

TRIBUTARY AND WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/09/09

4728A1
35 17 57.0 086 05 47.0 4
ELK RIVER
47 7.5 CAPITOL HILL
0/#000S RES 040692
ELK RIVER DAM OR BANK JUST BELO DAM
11EPALES 21!1204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	08 45		0.540	1.900	0.069	0.011	0.045
73/05/16	09 30		0.540	0.180	0.026	0.005K	0.010
73/06/11	12 45		0.630	0.970	0.083	0.023	0.045
73/07/02	08 40		0.380	1.540	0.079	0.015	0.030
73/08/07	13 45		0.029	0.600	0.080	0.019	0.030
73/09/06	09 40		0.042	0.630	0.182	0.005K	0.020
73/10/09	09 25		0.220	1.450	0.730	0.017	0.017
73/11/06	09 35		0.037	0.400	0.055	0.005	0.025
73/12/08	14 05		0.240	0.600	0.036	0.016	0.050
74/01/14	09 25		0.540	1.200	0.100	0.020	0.070
74/02/05	09 30		0.600	0.200	0.035	0.015	0.035
74/02/19	09 25		0.630	0.300	0.040	0.015	0.025
74/03/08	13 30		0.650	0.300	0.045		0.030
74/03/26	09 15		0.680	0.300	0.020	0.010	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4728A2
35 18 26.0 085 56 34.0 4
ELK RIVER
47 7.5 ALTO
I/WOODS RES 040691
SEC RD BRDG AT RUTLEDGE FORD
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09 54		0.670	1.320	0.022	0.005K	0.022
73/05/16	10 35		0.720	0.100K	0.011	0.005K	0.010
73/06/11	13 25		0.870	0.540	0.022	0.008	0.025
73/07/02	09 35		1.420	0.260	0.024	0.010	0.015
73/08/07	15 05		0.890	0.260	0.084	0.008	0.025
73/09/06	10 25		0.860	0.500	0.100	0.005K	0.020
73/10/09	10 10		0.660	0.700	0.072	0.012	0.020
73/11/06	10 35		0.470	0.250	0.012	0.006	0.025
73/12/07	14 40		1.100	2.600	0.310	0.008	0.035
74/01/14	10 05		0.810	0.100	0.020	0.010	0.025
74/02/05	10 17		0.620	0.100K	0.015	0.005	0.015
74/02/19	10 23		0.650	0.200	0.015	0.010	0.035
74/03/08	14 05		0.600	0.400	0.025	0.010	0.035
74/03/26	10 00		0.720	0.200	0.020	0.005	0.015

84

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

472881
35 17 30.0 086 01 32.0 4
CHILDER RIVER
47 7.5 CAPITOL HILL
T/#OODS RES 040692
BRDG 1 MI W OF GUM CR .25 N CAPITOL HILL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	05	0.310	1.000	0.008	0.005K	0.040
73/05/16	10	10	0.480	0.240	0.027	0.012	0.020
73/06/11	13	00	0.460	0.825	0.036	0.010	0.025
73/07/02	09	15	0.510	1.260	0.048	0.011	0.045
73/08/07	14	35	0.600	1.320	0.132	0.008	0.052
73/12/07	14	20	0.490	0.900	0.148	0.012	0.045
74/01/14	09	45	0.720	0.300	0.024	0.010	0.030
74/02/05	09	50	0.510	0.200	0.065	0.010	0.025
74/02/19	10	00	0.430	0.300	0.010	0.010	0.050
74/03/08	13	45	0.320	0.400	0.040	0.020	0.027
74/03/26	09	45	0.420	0.400	0.020	0.010	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4728C1
35 17 40.0 086 00 20.0 4
GUM CREEK
47 7.5 CAPITOL HILL
T/=0005 RES 040692
GUM CR RD BRDG JUST NE OF GUM CR
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	15	0.470	1.300	0.023	0.005K	0.030
73/05/16	10	20	0.580	1.300	0.056	0.012	0.030
73/06/11	13	10	0.800	1.300	0.030	0.010	0.020
73/07/02	09	25	0.540		0.035	0.014	0.035
73/08/07	14	50	0.420	0.280	0.050	0.008	0.035
73/11/06	10	20	0.105	0.400	0.023	0.006	0.030
73/12/07	14	25	0.740	1.800	0.490	0.012	0.025
74/01/14	09	50	0.840	1.500	0.044	0.010	0.030
74/02/05	10	00	0.630	0.400	0.055	0.005	0.020
74/02/19	10	10	0.520	0.300	0.015	0.010	0.045
74/03/08	13	50	0.430	0.700	0.025	0.010	0.045
74/03/26	09	50	0.616	0.200	0.015	0.010	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

472801
35 17 42.0 085 57 44.0 4
YELLOW BRANCH
47 7.5 ALTO
T/*000S RES 040691
SEC RD BRDG NEAR SHAKE RAG SCHOOL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	19	1.440	0.540	0.010	0.005K	0.030
73/05/16	10	30	0.750	0.600	0.075	0.010	0.045
73/06/11	13	15	1.780	1.050	0.017	0.007	0.015
73/07/02	09	30	0.115	0.840	0.027	0.010	0.065
73/12/07	14	30	2.160	1.000	0.136	0.012	0.015
74/01/14	09	57	1.510	0.600	0.048	0.015	0.030
74/02/05	10	10	1.400	0.300	0.040	0.007	0.015
74/02/19	10	15	0.950	0.800	0.040	0.015	0.060
74/03/08	14	00	1.300	0.600	0.035	0.010	0.045
74/03/26	09	55	1.600	0.300	0.125	0.010	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

472861
35 20 33.0 085 57 33.0 4
BEANS CREEK
47 7.5 ALTO
T/WOODS RES 040691
SEC RD BRDG .5 E OF PRAIRIE PLANS
11EPALES 211120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	45	0.990		0.021	0.005K	0.015
73/05/16	10	45	1.140		0.040	0.007	0.010
73/06/11			1.500	0.100K	0.010	0.008	0.010
73/08/07	15	20	1.400	0.190	0.033	0.007	0.020
73/09/06	10	35	0.580	0.480	0.110	0.006	0.015
73/10/09	10	20	0.710	0.700	0.054	0.014	0.015
73/11/06	10	45	0.520	0.150	0.011	0.005K	0.020
73/12/07	14	50	1.700	0.100K	0.020	0.008	0.010
74/01/14	10	15	1.360	0.300	0.028	0.010	0.025
74/02/05	10	30	0.970	0.100K	0.010	0.005K	0.010
74/02/19	10	30	1.060	0.200	0.020	0.007	0.020
74/03/08	14	15	0.800	0.200	0.015	0.005K	0.020
74/03/26	10	15	1.180	0.100K	0.030	0.010	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

52

STORET RETRIEVAL DATE 76/09/09

4728F1
35 20 07.0 085 59 26.0 4
BRADLE CREEK
47 7.5 ALTO
T/WOODS RES 040691
SEC RD BRDG 1.2 MI WSW PRAIRIE PLAINS SC
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	55	1.420	0.440	0.013	0.018	0.055
73/05/16	10	53	1.500	0.100K	0.011	0.014	0.020
73/06/11	13	40	1.840	0.480	0.012	0.012	0.025
73/07/02	09	45	1.840	0.380	0.022	0.010	0.020
	09	55	1.620	1.100	0.012	0.012	0.020
73/08/07	15	25	1.360	0.100K	0.026	0.034	0.045
73/09/06	10	50	0.820	0.460	0.110	0.011	0.020
73/10/09	10	30	0.710	0.450	0.054	0.061	0.075
73/11/06	10	55	0.680	0.100K	0.011	0.102	0.122
73/12/07	14	55	2.000	0.700	0.104	0.016	0.045
74/01/14	10	22	1.680	0.100	0.016	0.015	0.030
74/02/05	10	40	1.440	0.100K	0.010	0.010	0.017
74/02/19	10	40	1.360	0.150	0.010	0.015	0.030
74/03/08	14	20	1.340	0.300	0.025	0.015	0.030
74/03/26	10	25	1.600	0.150	0.020	0.010	0.012

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4728G1
35 20 10.0 086 06 40.0 4
ROLLINS CREEK
47 7.5 CAPITOL HILL
T/WOODS RES 040692
SEC RD BRDG IN AEDCR PERMISSION IN ADVAN
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	20	0.220	1.980	0.042	0.010	0.055
73/05/16	09	13	0.550	0.140	0.015		
73/06/11	14	00	0.580	1.080	0.056	0.021	0.060
73/07/02	08	30	0.460	0.220	0.014	0.020	0.050
73/08/07	13	25	0.138	1.500	0.630	0.007	0.025
73/09/06	09	25	0.072	0.735	0.090	0.005K	0.030
73/10/09	09	10	0.050	1.450	0.280	0.014	0.040
73/11/06	09	20	0.084	0.250	0.031	0.031	0.040
73/12/07	13	50	0.310	0.200	0.028	0.020	0.050
74/01/14	09	11	0.325	0.500	0.066	0.020	0.055
74/02/05	09	15	0.560	3.000	0.360	0.015	0.020
74/02/19	09	10	0.610	0.200	0.025	0.015	0.040
74/03/08	13	15	0.640	0.200	0.020	0.015	0.030
74/03/26	09	00	0.540	0.300	0.020	0.025	0.050

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724A1
35 15 30.0 086 07 16.0 4
ELK RIVER
47 7.5 CAPITOL HILL
I/TIMS FORD RES 040692
US HWY 41-A BRDG JUST SE OF ESTILL SPRS
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	13 55		0.500	0.380	0.013	0.008	0.030
73/05/15	14 40		0.420	0.290	0.005K	0.005K	0.015
73/06/11	11 30		0.105	1.890	0.011	0.014	0.020
73/07/02	11 00		0.050	0.400	0.013	0.016	0.030
73/08/07	12 05		0.010K	0.440	0.018	0.005K	0.030
73/09/07	11 45		0.010K	0.540	0.012	0.005K	0.025
73/10/05	11 35		0.010K	0.300	0.010	0.005K	0.057
73/11/04	11 00		0.080	0.900	0.044	0.009	0.045
73/12/07	11 10		0.260	1.100	0.100	0.016	0.030
74/01/13	15 05		0.460	0.300	0.026	0.026	0.065
74/02/08	11 25		0.580	0.100K	0.025	0.010	0.035
74/02/25	15 30		0.610	0.200	0.015	0.010	0.035
74/03/08	11 55		0.640	0.400	0.055	0.010	0.030
74/03/29	11 25		0.630	0.200	0.030	0.025	0.025

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724A2
35 11 31.0 086 16 50.0 4
ELK RIVER
47 7.5 LOIS
O/TIMS FORD RES 040691
TN HWY 50 BRDG 1.5 MI NW OF HARMONY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	12 55		0.460	1.100	0.030	0.009	0.025
73/05/15	13 45		0.450	0.950	0.012	0.015	0.020
73/06/11	10 05		0.520	0.900	0.022	0.012	0.015
73/07/02	09 35		0.210	0.290	0.020	0.022	0.030
73/08/07	10 50		0.072	0.560	0.270	0.020	0.045
73/09/07	10 45		0.092	0.570	0.260	0.020	0.060
73/10/05	10 15		0.071	1.100	0.640	0.018	0.135
73/11/04	10 00		0.089	0.450	0.160	0.026	0.080
73/12/07	10 10		0.168	0.500	0.068	0.008	
74/01/13	14 15		0.300	0.200	0.016	0.032	0.060
74/02/08	10 30		0.460	0.100	0.015	0.010	0.030
74/02/25	13 45		0.510	0.300	0.015	0.015	0.040
74/03/08	10 55		0.530	0.400	0.040	0.010	0.030
74/03/29	10 00		0.570	0.200	0.015	0.015	0.020

STORET RETRIEVAL DATE 76/09/09

472481
35 15 47.0 086 08 14.0 4
TAYLOR CREEK
47 7.5 TULLAHOMA
T/TIMS FORD RES 040692
EASTBROOK RD BRDG AT SE EDGE ESTILL SPRS
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	14 00		0.273	1.890	0.036	0.005K	0.035
73/05/15	14 45		0.252	1.940	0.050	0.005K	0.025
73/06/11	12 00		0.110	0.940	0.008	0.008	0.025
73/07/02	11 15		0.054	1.400	0.020	0.010	0.025
73/08/07	11 20		0.010K	0.380	0.026	0.006	0.030
73/09/07	11 55		0.010K	0.690	0.021	0.005K	0.025
73/10/05	12 00		0.010K	0.350	0.030	0.006	0.050
73/11/04	11 05		0.110	1.450	0.147	0.006	0.060
73/12/07	11 15		0.368	0.675	0.400	0.008	0.010
74/01/13	15 15		0.340	0.150	0.012	0.012	0.015
74/02/08	11 30		0.300	0.100K	0.010	0.005	0.015
74/02/25	14 40		0.312	0.100K	0.010	0.005	0.020
74/03/08	11 30		0.312	0.100	0.040	0.010	0.010
74/03/29	11 30		0.320	0.200	0.035	0.015	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724C1
35 16 29.0 086 10 19.0 4
ROCK CREEK
47 7.5 TULLAHOMA
T/TIMS FORD RES 040692
BRDG NEAR FLETCHER CEMETERY
11EPALES 211120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/13	14	12	1.180	0.560	0.027	0.220	0.320
73/05/15	13	55	1.860	3.200	0.130	0.350	0.460
73/06/11	12	10	1.320	1.360	0.016	0.240	0.290
73/07/02	11	30	2.140	0.350	0.030	0.300	0.345
73/08/07	11	30	1.300	0.880	0.333	0.450	0.480
73/09/07	12	00	1.500	0.420	0.052	0.540	0.575
73/10/05	12	15	2.260	0.550	0.066	0.430	0.490
73/11/04	11	15	1.960	1.750	0.250	0.420	0.500
73/12/07	11	15	1.800	1.200	0.500	0.192	0.240
74/01/13	15	25	0.860	0.400	0.040	0.048	0.080
74/02/08	11	40	1.010	0.400	0.150	0.070	0.130
74/02/25	14	45	1.260	0.600	0.190	0.080	0.145
74/03/08	12	10	1.300	0.900	0.360	0.140	0.220
74/03/29	11	40	2.300	0.300	0.080	0.175	0.210

STORET RETRIEVAL DATE 76/09/09

472401
35 15 59.0 086 12 00.0 4
LITTLE HURRICANE CREEK
47 7.5 TULLAHOMA
T/TIMS FORD RES 040692
BRDG .5 MI S OF PLEASANT GROVE CHURCH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	14	25	1.200	0.850	0.015	0.010	0.040
73/05/15	15	00	1.240	0.580	0.025	0.009	0.015
73/06/11	12	15	1.300	0.900	0.006	0.022	0.035
73/07/02	11	30	1.320	0.100K	0.012	0.008	0.015
73/08/07	12	40	1.220	0.100K	0.028	0.019	0.025
73/09/07	12	10	1.080	0.120	0.010	0.016	0.025
73/10/05	12	30	1.200	0.100K	0.022	0.022	0.045
73/11/04	11	25	1.040	0.100K	0.021	0.023	0.025
73/12/07	11	30	1.430	0.100	0.100	0.020	0.030
74/01/13	15	35	1.180	0.200	0.012	0.016	0.020
74/02/08	11	45	1.100	0.100K	0.010	0.015	0.015
74/02/25	15	00	1.180	0.100K	0.005K	0.020	0.025
74/03/08	12	20	1.260	0.100	0.030	0.015	0.020
74/03/29	11	45	1.120	0.200	0.025	0.020	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724E1
35 17 52.0 086 16 31.0 4
TURKEY CREEK
47 7.5 CUMBERLAND S
T/TIMS FORD RES 040692
BRDG .75 MI SE OF TURKEY CREEK SCHOOL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	12 00		0.155	0.690	0.013	0.006	0.035
73/05/15	13 15		0.160	0.160	0.007	0.009	0.015
73/06/11	09 15		0.010K	1.760	0.028	0.010	0.030
73/07/02	08 45		0.290	1.890	0.027	0.018	0.040
73/08/07	10 00		0.018	0.420	0.022	0.007	0.035
73/09/07	09 45		0.210	0.200	0.009	0.008	0.015
73/10/05	08 50		0.310	0.100K	0.012	0.015	0.050
73/11/04	09 10		0.230	0.100K	0.014	0.013	0.020
73/12/07	09 20		0.420	0.600	0.108	0.012	0.012
74/01/13	13 25		0.232	0.200	0.016	0.016	0.020
74/02/08	09 45		0.330	0.100K	0.010	0.010	0.015
74/02/25	13 00		0.270	0.100	0.010	0.015	0.055
74/03/08	10 00		0.224	0.300	0.025	0.010	0.015
74/03/29	09 15		0.152	1.200	0.040	0.025	0.130

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724F1
35 17 35.0 086 18 05.0 4
HURRICANE CREEK
47 7.5 CUMBERLAND S
T/TIMS FORD RES 040692
BANK CLOSE AS POSSIBLE TO MOUTH OF STREA
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	12	20	0.054	0.820	0.010	0.005K	0.030
73/05/15	13	00	0.240	1.680	0.037	0.010	0.015
73/06/11	09	35	0.013	0.750	0.014	0.007	0.025
73/07/02	09	05	0.056	0.480	0.016	0.013	0.050
73/08/07	10	20	0.010K	0.560	0.040	0.007	0.040
73/09/07	10	00	0.010K	0.560	0.007	0.005K	0.030
73/10/05	09	30	0.198	0.100K	0.010	0.016	0.090
73/11/04	09	30	0.070	0.850	0.105	0.011	0.020
73/12/07	09	35	0.208	0.500	0.064	0.012	0.030
74/01/13	13	45	1.600	0.300	0.020	0.024	0.045
74/02/08	10	00	0.176	0.100K	0.010	0.010	0.015
74/02/25	13	15	0.144	0.100K	0.005	0.010	0.020
74/03/08	10	30	0.104	0.300	0.040	0.010	0.020
74/03/29	09	30	0.128	0.100	0.035	0.009	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

472401
35 10 15.0 086 07 45.0 4
DRY CREEK
47 7.5 BELVIDERE
T/TIMS FORD RES 040891
US HWY 64 BRDG .5 MI SW OF WINCHESTER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	13	20	1.360		0.005K	0.008	0.060
73/05/15	14	10	1.580	0.840	0.030	0.022	0.045
73/06/11	11	00	1.440	1.680	0.027	0.014	0.025
73/07/02	09	25	1.500	2.940	0.078	0.019	0.030
73/08/07	11	12	0.038	4.100			
73/11/04	10	30	0.270	1.400	0.046		
73/12/07	10	30	1.900	0.300	0.160	0.028	0.045
74/01/13	14	38	0.336	0.200	0.012	0.016	0.020
74/02/08	11	00	1.900	0.100	0.020	0.015	0.040
74/02/25	14	10	1.760	0.200	0.005	0.015	0.030
74/03/08	11	10	1.850	0.300	0.017	0.015	0.037
74/03/29	10	30	1.920	0.400	0.025	0.025	0.045

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724J1
35 12 02.0 086 05 41.0 4
#AGNEW CREEK
47 7.5 #INCHESTER
T/TIMS FORD RES 040692
US HWY 41-A BRDG AT SW EDGE OF DECHARD
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	13 40		1.140	0.910	0.105	0.260	0.330
73/06/11	11 15		1.720	0.520	0.126	0.180	0.230
73/07/02	10 10		0.082	0.940	0.019	0.050	0.155
73/12/07	10 45		1.920	0.300	0.092	0.185	0.225
74/01/13	14 50		1.600	0.400	0.036	0.060	0.095
74/02/08	11 15		1.180	0.100	0.025	0.055	0.075
74/02/25	14 25		1.520	0.500	0.095	0.105	0.160
74/03/08	11 40		1.340	0.500	0.050	0.185	0.230
74/03/29	11 10		1.260	0.800	0.125	0.140	0.200

STORET RETRIEVAL DATE 76/09/09

4724K1
35 14 33.0 086 06 59.0 4
MESSEY BRANCH
47 7.5 WINCHESTER
T/TIMS FORD RES 040692
US HWY 41-A BRDG 4 MI N OF WINCHESTER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	13 49		1.160	0.800	0.015	0.005K	0.035
73/05/15	14 30		1.440	1.200	0.048	0.012	0.045
73/06/11	11 25		1.640	1.380	0.017	0.020	0.020
73/07/02	10 20		1.820	0.960	0.029	0.018	0.030
73/12/07	11 00		1.850	0.200	0.032	0.020	0.040
74/01/13	14 55		2.000	0.250	0.032	0.040	0.060
74/02/08	11 20		1.680	0.600	0.115	0.015	0.020
74/02/25	14 30		1.700	0.200	0.020	0.015	0.025
74/03/08	11 45		1.360	0.300	0.025	0.010	0.020
74/03/29	11 20		1.300	0.400	0.010	0.015	0.040

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4724AA TF4724AA P006700
35 12 02.0 086 07 05.0 4
WINCHESTER
47 7.5 WINCHESTER
T/TIMS FORD RESERVOIR 040692
BOILING FORK CREEK/ELK RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/31	08 00								
CP(T)-			2.810	4.000	0.411	3.680	4.400	0.791	0.513
73/06/01	08 00								
73/07/04	07 00								
CP(T)-			3.200	10.000	3.200	15.000	15.000	0.320	0.512
73/07/05	07 00								
73/08/05	07 00								
CP(T)-			11.800	5.800	1.200	14.000	14.500	0.300	0.350
73/08/06	07 00								
73/09/06	19 00								
CP(T)-			11.000	11.300	3.020			0.500	0.400
73/09/07	19 00								
73/10/08	07 00								
CP(T)-			9.100	23.000	10.000	17.900	18.000	0.400	0.500
73/10/09	07 00								
73/11/07	07 00								
CP(T)-			7.400	11.500	7.400	13.100	13.500	0.337	0.400
73/11/08	07 00								
73/12/03	07 00		0.170	16.500	4.600	7.200	9.300		
74/01/03	07 00		3.600	6.800	1.560	4.200	5.200	0.906	0.594
74/02/01	07 00		3.120	8.700	3.900	4.900	6.000	0.782	0.993
74/03/01	07 00		4.000	13.000	6.100	7.700	8.600	0.477	0.733
74/06/06	07 00		10.600	9.000	4.200	7.800	9.000	0.445	0.348
74/07/01	07 00		14.300	9.600	4.400	13.500	15.700	0.212	0.389

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STORET RETRIEVAL DATE 76/09/09

4724CA TF4724CA P015000*
35 20 48.0 086 12 40.0 4
TULLAHOMA
47 7.S TULLAHOMA
T/TIMS FORD RESERVOIR 040692
ROCK CREEK/ELK RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/12/03	06 00								
CP(T)-			4.700	10.000	3.200	2.100	3.700	3.000	2.000
73/12/04	06 00								
74/01/17	06 00								
CP(T)-			3.900	12.000			5.600	5.090	3.510
74/01/18	06 00								
74/02/27	06 00								
CP(T)-			3.000	9.800	1.390	1.125	2.600	3.520	5.000
74/02/28	06 00								
74/04/30	06 00								
CP(T)-			5.800	23.000	6.100	3.950	5.200	1.550	2.900
74/04/30	24 00								
74/05/30	06 00								
CP(T)-			2.060	19.000	3.750	2.700	3.800	2.500	2.800
74/05/30	12 00								
74/06/25	06 00								
CP(T)-			2.100	32.500	13.500	3.000	4.100	1.400	2.300
74/06/25	24 00								
74/07/30	06 00								
CP(T)-			4.400	15.000	2.000	4.200	5.700	1.400	2.000
74/07/30	24 00								
74/08/28	06 00								
CP(T)-			1.600	30.000	16.500	5.400	6.100	1.400	1.800
74/08/28	24 00								

STORET RETRIEVAL DATE 76/09/09

4724MA TF4724MA P001800
35 09 50.0 086 00 22.0 4
COWAN
47 7.5 WINCHESTER
T/TIMS FORD RESERVOIR 040692
BOILING FORK CREEK/ELK RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/05	10 00								
CP(T)-			4.130	5.300	0.216	6.730	7.600	0.317	0.216
73/06/05	15 00								
73/07/05	10 00								
CP(T)-			4.100	18.000	3.800	4.300	5.200	0.190	0.249
73/07/05	15 00								
73/08/03	10 00								
CP(T)-			4.600	6.000	0.700	4.200	9.150	0.200	0.158
73/08/03	15 00								
73/09/11	10 00								
CP(T)-			0.231	28.000	7.250	10.100	14.000	0.240	0.216
73/09/11	15 00								
73/10/05	10 00								
CP(T)-			5.800	12.500	0.550	8.200	9.000	0.268	0.242
73/10/05									
73/11/02	10 00								
CP(T)-			4.200	10.500	0.095	7.200	10.000	0.245	0.236
73/11/02	15 00								
73/12/08	08 00								
CP(T)-			7.100	4.000	0.120	4.900	5.700	0.217	0.188
73/12/08	22 00								
74/01/10	10 00								
CP(T)-			5.280	1.200	0.120	1.680	2.100	0.180	0.175
74/01/10	15 00								
74/02/14	10 00								
CP(T)-			5.600	4.700	0.150	4.000	4.700	0.230	0.236
74/02/14	15 00								
74/03/08	10 00								
CP(T)-			4.000	12.000	1.900	5.100	7.500	0.236	0.231
74/03/08	15 00								
74/05/15	09 00								
CP(T)-			4.400	11.000	0.578	7.050	7.900	0.222	0.245
74/05/15	13 00								
74/06/06	07 30								
CP(T)-			5.400	4.600	0.093	5.200	5.800	0.218	0.210
74/06/06	13 30								

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STORET RETRIEVAL DATE 76/09/09

4724MA TF4724MA P001800
35 09 50.0 086 00 22.0 4
COWAN
47 7.5 WINCHESTER
T/TIMS FORD RESERVOIR 040692
BOILING FORK CREEK/ELK RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/07/09 CP(T)- 74/07/09	09 00 13 00		9.900	5.400	0.860	10.000	11.000	0.211	0.215

APPENDIX E

PARAMETRIC RANKINGS OF LAKES SAMPLED BY NES IN 1974

STATE OF TENNESSEE

LAKE DATA TO BE USED IN ANALYSIS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
4701	LAKE BARKLEY	0.128	0.480	473.381	12.723	10.400	0.047
4704	NOONE RESERVOIR	0.052	0.995	442.071	11.415	14.600	0.029
4706	CHEATHAM RESERVOIR	0.142	0.460	473.800	8.160	9.600	0.084
4707	CHEROKEE LAKE	0.051	0.780	448.667	12.162	15.000	0.022
4708	CHICKAMAUGA LAKE	0.031	0.440	463.833	3.111	9.600	0.012
4711	DOUGLAS LAKE	0.026	0.440	442.823	4.553	15.000	0.014
4712	FORT LOUDON RESERVOIR	0.054	0.550	465.571	4.776	12.600	0.025
4713	GREAT FALLS LAKE	0.020	0.405	444.417	3.983	14.800	0.007
4717	NICKAJACK RESERVOIR	0.051	0.495	459.833	2.742	9.700	0.025
4720	OLD HICKORY LAKE	0.058	0.330	469.769	8.931	9.400	0.019
4722	WATTS BAR RESERVOIR	0.032	0.510	462.250	5.550	11.000	0.012
4723	J. PERCY PRIEST RESERVOI	0.056	0.155	430.200	9.993	15.000	0.021
4724	TIM'S FORD RESERVOIR	0.021	0.445	398.167	6.739	14.900	0.009
4725	SOUTH HOLSTON LAKE	0.014	0.570	404.750	7.667	15.000	0.008
4727	REELFOOT LAKE	0.233	0.170	477.917	80.958	13.200	0.059
4728	WOODS RESERVOIR	0.017	0.320	429.083	7.392	15.000	0.005

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
4701	LAKE BARKLEY	13 (2)	40 (6)	13 (2)	7 (1)	73 (11)	13 (2)	159
4704	BOONE RESERVOIR	40 (6)	0 (0)	73 (11)	20 (3)	47 (7)	20 (3)	200
4706	CHEATHAM RESERVOIR	7 (1)	47 (7)	7 (1)	40 (6)	90 (13)	0 (0)	191
4707	CHEROKEE LAKE	50 (7)	7 (1)	53 (8)	13 (2)	13 (0)	40 (6)	176
4708	CHICKAMAUGA LAKE	67 (10)	63 (9)	33 (5)	93 (14)	90 (13)	70 (10)	416
4711	DOUGLAS LAKE	73 (11)	63 (9)	67 (10)	80 (12)	13 (0)	60 (9)	356
4712	FORT LOUDON RESERVOIR	33 (5)	20 (3)	27 (4)	73 (11)	60 (9)	27 (4)	240
4713	GREAT FALLS LAKE	87 (13)	73 (11)	60 (9)	87 (13)	40 (6)	93 (14)	440
4717	NICKAJACK RESERVOIR	50 (7)	33 (5)	47 (7)	100 (15)	80 (12)	33 (5)	343
4720	OLD HICKORY LAKE	20 (3)	80 (12)	20 (3)	33 (5)	100 (15)	53 (8)	306
4722	WATTS BAR RESERVOIR	60 (9)	27 (4)	40 (6)	67 (10)	67 (10)	70 (10)	331
4723	J. PERCY PRIEST RESERVOI	27 (4)	100 (15)	80 (12)	27 (4)	13 (0)	47 (7)	294
4724	TIM'S FORD RESERVOIR	80 (12)	53 (8)	100 (15)	60 (9)	33 (5)	80 (12)	406
4725	SOUTH HOLSTON LAKE	100 (15)	13 (2)	93 (14)	47 (7)	13 (0)	87 (13)	353
4727	REELFOOT LAKE	0 (0)	93 (14)	0 (0)	0 (0)	53 (8)	7 (1)	153
4728	WOODS RESERVOIR	93 (14)	87 (13)	87 (13)	53 (8)	13 (0)	100 (15)	433